When Roll-up Breaks: Serial Private Equity Acquisitions in the Hospital Industry *

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Abstract

This paper challenges the idea that private equity (PE) roll-ups consistently create site-level operating value across sequential acquisitions. I link hospital operations, finances, quality, and deal data and classify targets as stand-alone, platform, or add-on. Platforms are selected from low-leverage, higher-margin hospitals, consistent with grandstanding at entry. They secure cheaper debt at close, restructure balance sheets and capital spending, and then exhibit gradual profitability gains through financing and within-rule operational channels. Add-ons inherit the platform facility, cut headcount, and do not generate additional profitability improvement. The evidence points to a two-stage strategy, with value created at platform formation and little scalability to add-on acquisitions in the hospital industry.

Keywords: Private Equity; Roll-up; Hospital Acquisitions; Within-Rule Operations; Debt Financing

JEL Classifications: G23, G34, I11

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1 Introduction

Private equity has become a prominent force in U.S. hospital mergers and acquisitions, with deals increasingly organized as roll-ups in which a relatively large, financially healthy platform hospital is acquired first and subsequently followed by a sequence of smaller add-on targets. The strategic narrative emphasizes scale economies, centralized procurement, and integration synergies. Yet most empirical work treats private equity ownership as a single treatment, obscuring heterogeneity in financing, timing, and post-deal adjustments across stages of the roll-up. A staging perspective is essential for understanding where value is created, how it is shared across the portfolio, and which dimensions of hospital behavior actually change.

This paper develops and tests that staging perspective in the hospital sector, a setting well suited to the task because service lines, cost reporting, and regulatory constraints are relatively uniform and publicly documented. I classify hospitals as platforms, add-ons, or stand-alone targets based on observed sequencing within a sponsor's portfolio and map these roles into financing terms, balance sheet structure, operating outcomes, labor reallocation, and quality of care.[1] Taking deal type seriously allows the analysis to separate immediate changes tied to capital structure from slower-moving operational integration and to isolate which dimensions scale across successive acquisitions. Because CMS Cost Reports are hospital-entity accounting rather than consolidated system-level accounting, buyout debt raised at the platform parent may not appear on individual hospital balance sheets. I therefore interpret leverage movements as local recapitalization effects rather than changes in the consolidated borrower's capital structure.[2]

The conceptual framework draws on classic theories of debt contracting and staged investment. When future efficiency gains are costly for lenders to verify, financing terms are largely determined at origination by pledgeable collateral and observable risk (Myers, 1977; Diamond, 1991; Rajan and Winton, 1995). This implies that platform hospitals, typically larger and less levered ex ante, should secure favorable pricing and covenants upon acquisition, while add-on hospitals are folded into the platform's established debt stack with limited incremental underwriting. Investment and restructuring are expected to arrive with a lag as integration proceeds and as portfolio scale justifies centralized capabilities (Stein, 1997). The staging logic therefore predicts immediate financing advantages at platforms, gradual operational changes where

[1] For completeness, I also retain stand-alone acquisitions in the sample, defined as hospitals acquired by PE but not part of a roll-up sequence. They are not the focus of the analysis, but including them ensures the estimates reflect the full population of PE acquisitions.

[2] Under U.S. GAAP, pushdown accounting that would embed parent-level acquisition debt into subsidiary ledgers is optional (ASC 805-50; SEC SAB 5.J) and is rarely elected by hospitals because it disrupts Medicare cost-report comparability and may violate state solvency requirements. As a result, CMS filings typically exclude system-level buyout debt and record only local equity adjustments. See Appendix B.

coordination gains are largest, and more limited scope for add-ons beyond cost rationalization and back-office consolidation. Conceptually, these patterns are consistent with reputational signaling incentives that make early, salient improvements at the platform especially valuable, a mechanism related to grandstanding in fund cycles (Gompers, 1996).

The empirical design is tailored to these mechanisms. I begin by modeling selection into platform versus add-on status to show how pre-acquisition balance sheets and operating performance shape deal roles. This step ensures that subsequent treatment effects are not conflated with systematic differences in the types of hospitals PE firms choose for different stages of a roll-up. I then estimate difference-in-differences (DID) models that group outcomes into short-run and long-run windows, aligning the tests with the expected timing of financing repricing and slower operational adjustments. To further trace dynamics and validate the parallel-trends assumption, I complement the baseline estimates with event-study specifications. Finally, I implement an instrumental variables strategy using state-level variation in corporate practice of medicine (CPOM) regulations to address endogeneity in PE entry, focusing on whether the effects are concentrated at platforms or extend to add-ons. In this way, each empirical step speaks directly to the theory: selection addresses who becomes a platform versus add-on, DID tests short- and long-run outcomes, event studies reveal trajectories, and IV strengthens causal interpretation.

The results show a staged pattern of value creation. For platform hospitals, the most immediate effects appear in financing. Interest burdens fall, borrowing spreads narrow, and balance sheets rebalance as leverage declines, equity positions strengthen, and capital expenditures increase. These financial improvements set the stage for operating gains that materialize with a lag. Over time, platforms achieve higher profitability, expand throughput, and compress unit costs. Activity shifts toward standardized, high-acuity lines, case-mix indices rise, and non-Medicare prices remain stable, indicating that within-rule strategies rather than price increases drive performance improvements.[3,4]

Add-on hospitals follow a different trajectory. They do not share in the platform's financing repricing, instead facing short-run increases in leverage and thinner cash positions with little new investment. Profitability does not improve, and operating outcomes reflect contraction rather than growth: costs and volumes decline, and case-mix adjusted measures show weaker or negative changes. Labor adjustments reinforce this pattern, with persistent headcount reductions across both core clinical and administrative staff. These results are consistent with

[3]By "within-rule strategies" I mean optimization of existing Medicare payment rules through improved documentation and coding, investment in revenue-cycle and IT systems, and selective expansion into high-acuity service lines with higher DRG weights. See Appendix B.

[4]See Silverman and Skinner (2004); Dafny (2005) for evidence that hospitals respond to payment reforms primarily by altering coding and case-mix rather than expanding volume or intensity of care.

consolidation, tighter staffing, and scope rationalization rather than local expansion. Stand-alone hospitals, included for completeness, yield noisier estimates given their limited frequency and are interpreted primarily as a robustness check.

Efficiency improvements at platforms are accompanied by deliberate shifts in emphasis across dimensions of care. Clinical outcomes remain stable, with mortality rates close to zero across conditions and modest reductions in heart attack readmissions that are not uniformly present across diagnoses. Patient experience shows selective changes: overall ratings, cleanliness, and likelihood to recommend decline modestly, while communication, responsiveness, and pain management remain broadly stable. These patterns are consistent with disciplined private equity management that emphasizes operational efficiency and throughput discipline, preserving clinical outcomes while accepting measured trade-offs in less central aspects of the patient environment.

Instrumental variables estimates using CPOM reforms confirm that the main findings are not driven by endogenous selection. In the first stage, increases in the CPOM index predict PE targeting, with the strongest effects concentrated in platform acquisitions. In the second stage, instrumented exposure to PE reduces leverage ratios while raising profitability, again concentrated at platforms. These results reinforce the conclusion that financing advantages and subsequent operational improvements are anchored at platform close and do not scale evenly to later acquisitions.

The contribution is threefold. First, the paper develops a staged perspective on roll-ups by distinguishing platforms from add-ons and tracing their divergent trajectories. Second, it documents that efficiency gains at platforms operate through within-rule mechanisms such as improved coding, service-line mix, and case-mix adjustments, while commercial prices remain flat. Third, it shows that value creation is unevenly distributed, with platforms capturing financing and throughput-driven efficiency improvements, while add-ons primarily shrink scope and reduce labor without margin expansion. These results clarify the scalability limits of PE operating strategies in hospitals and highlight why early platform successes may not be replicated across later targets.

2 Related Literature

This study contributes to several strands of literature on private equity in health care and in the broader economy. First, I add to research on the real effects of private equity ownership in hospitals and related provider settings (e.g., Liu, 2022; Gao et al., 2025). Prior work typically treats private equity acquisition as a homogeneous event. I introduce a classification of targets into stand-alone, platform, and add-on categories and show how outcomes vary with a hospital's

position relative to the roll-up sequence. This framework enables a more nuanced assessment of how value creation strategies evolve within portfolio buildouts. To my knowledge, this is the first study to systematically compare hospital outcomes across acquisition stages within a unified empirical design.

Second, I contribute to the literature on operational changes following buyouts, which documents gains in cost efficiency, profitability, and management practices (Kaplan, 1989; Harris et al., 2005; Liu, 2022; Gao et al., 2025), and which, more broadly, has emphasized financial, governance, and operational engineering as distinct channels of private equity value creation (Kaplan and Strömberg, 2009). By disaggregating performance by acquisition stage, I show that these gains are concentrated in platform deals, while add-ons rely more heavily on labor cost reductions without further improvements in profitability. This staging refines how we think about the deployment and scalability of private equity operating playbooks in health care delivery.

Third, I build on research on post-merger integration and roll-up strategies (Bourreau and Doğan, 2006; Borell and Heger, 2013; Bansraj and Smit, 2017; Hammer et al., 2022). Prior work emphasizes synergies, scope expansion, and network effects. Related evidence from hospital and physician markets shows that private-equity acquisitions can also reshape bargaining dynamics: PE-backed hospitals negotiate higher commercial reimbursement through greater financial leverage and bargaining expertise, while anesthesiology roll-ups exhibit price increases following add-on consolidations without measured changes in quality (Liu, 2022; Asil et al., 2024). I show that platform acquisitions function as both the financial and operational anchor of a roll-up, whereas add-ons deliver narrower savings that do not replicate the broader improvements observed at platforms. This distinction indicates limits to the transferability of value-creation strategies as portfolios expand and helps reconcile why early successes are not necessarily replicated across later targets.

Fourth, I connect the results to classic debt contracting and staged investment theories, which predict that low risk and stronger collateral support favorable loan terms at origination and that efficiency gains materialize gradually as integration proceeds (Myers, 1977; Diamond, 1991; Rajan and Winton, 1995; Hart and Moore, 1994; Stein, 1997). I find that platforms enjoy post-acquisition reductions in interest burdens and lower leverage, while add-ons do not trigger re-underwriting. The evidence is also consistent with reputational incentives that make early and salient improvements valuable at the outset of a roll-up, a mechanism related to grandstanding in fund cycles (Gompers, 1996). Together these ideas motivate a sequencing-based view of private equity value creation in hospitals.

Fifth, I contribute to research on hospital financing, which shows that hospitals' investment and operating decisions are highly sensitive to financial conditions even outside the private

equity context. Nonprofit hospitals adjust capital expenditures in response to the cost of capital and financing constraints (Wedig et al., 1989; Calem and Rizzo, 1995), and regulation and governance shape outcomes of ownership changes (Leone et al., 2005). More recent work finds that hospitals increase investment in response to positive asset inflows and cut back after negative wealth shocks (Adelino et al., 2015; Dranove et al., 2017; Adelino et al., 2022). Debt structure also influences bargaining with payers, underscoring the central role of financing in hospital strategy (Towner, 2020). My analysis extends this literature by showing how financing advantages are sequenced across platform and add-on acquisitions in private equity roll-ups.

Sixth, I relate to research on hospital responses to reimbursement rules. Classic evidence shows that hospitals exploit within-rule levers to raise revenues by adjusting coding and scope rather than by fundamentally altering care delivery. For example, hospitals increased coded severity in response to Medicare payment reforms (Dafny, 2005; Silverman and Skinner, 2004; Song et al., 2010). Hospitals also selectively expanded profitable service lines, such as cardiac and imaging, even when demand-side fundamentals remained unchanged (Capps et al., 2010). These studies highlight that regulatory and accounting rules create scope for revenue gains without raising prices directly. This precedent motivates my test of whether platforms similarly expand service-line scope and raise measured severity while keeping commercial price per discharge stable.

Finally, I contribute to the literature on how private equity ownership affects employees and patients. Existing studies offer mixed evidence on staffing, wages, prices, and quality in private equity–acquired providers (Lichtenberg and Siegel, 1990; Davis et al., 2014; Dafny et al., 2019; Eliason et al., 2020; Cerullo et al., 2022; Liu, 2022; Gao et al., 2025). By distinguishing platforms from add-ons, I show that employment and wage effects differ meaningfully across deal types and that patient experience tends to decline even when clinical outcomes remain broadly stable. This staging perspective clarifies the organizational and distributional channels through which private equity reshapes hospital operations and the conditions under which efficiency gains trade off against patient-facing quality.

3 Hypothesis Development

When monitoring is costly, lenders price loans at origination using pledgeable collateral and observable risk rather than unverifiable future efficiencies (Myers, 1977; Diamond, 1991; Rajan and Winton, 1995). In roll-ups, sponsors typically arrange a large, relatively low-cost debt facility at the platform close and then tuck subsequent add-on targets into that facility with limited incremental re-underwriting. Control rights and internal capital markets further imply that substantive operating changes arrive only after financing is secured and integration resources

are centralized (Stein, 1997). Stand-alone acquisitions are not part of a roll-up sequence and therefore need not exhibit the same patterns as platforms or add-ons.

H1: Staged selection into PE platforms versus add-ons.
Hospitals with lower leverage and stronger lagged operating performance are more likely to be acquired by private equity, especially as platforms, while higher leverage is more associated with add-on status. In addition, time-varying regulatory leniency in the corporate practice of medicine environment increases the likelihood of private equity entry through platforms.
Rationale. Debt-at-origination logic favors targets with better collateral and observed performance for platform financing (Myers, 1977; Diamond, 1991; Rajan and Winton, 1995). At the same time, regulatory momentum affects deal feasibility and financing conditions (Liu, 2022).

H2: Up-front financing advantage at platforms.
Platform hospitals experience immediate reductions in financing costs at deal close, reflected in lower interest expense over assets and lower interest expense relative to interest-bearing debt, together with narrower five-year LIBOR–adjusted spreads. By contrast, add-on targets do not receive relief at entry and can face transitory increases in effective rates and LIBOR–adjusted spreads when funded as incremental draws under the platform facility's leverage-based pricing schedule, with upfront costs recognized in interest expense.
Rationale. Origination terms at the platform are set against collateral and observable risk. Add-ons are typically financed under the existing credit agreement rather than through a fresh, hospital-specific repricing; incremental borrowing can place the facility in a higher pricing tier at funding and fees are amortized through interest expense, so measured rates at add-ons rise in the short run without a compensating repricing.

H3: Balance-sheet rebalancing, investment, and liquidity.
Following acquisition, platforms reduce the liabilities-to-assets ratio in both the short and longer post-deal windows, increase capital expenditures relative to assets, and do not systematically accumulate cash relative to assets. Add-on hospitals exhibit a short-run rise in liabilities-to-assets and a decline in cash relative to assets, with limited capex response; these add-on effects attenuate over time.
Rationale. Staged investment predicts that sponsors anchor financing at the platform and then fund centralized projects over time (Stein, 1997). Debt contracting theories emphasize that equity infusion and asset growth relax underinvestment frictions and improve borrowing terms (Myers, 1977; Diamond, 1991). In the roll-up setting, these mechanisms operate primarily at the platform stage, where the initial financing structure is anchored, while add-ons are typically folded into the existing facility without equivalent rebalancing.

H4: Profitability lift breaks beyond the platform.

Operating margin, operating income over assets, and return on assets rise at platforms primarily in the longer post-deal window, while add-ons exhibit muted or no margin gains.

Rationale. Private equity value creation is commonly understood to operate through financial, governance, and operational engineering (Kaplan and Strömberg, 2009). In roll-ups, these mechanisms are disproportionately deployed at the platform stage, where sponsors restructure operations, renegotiate financing, and anchor reporting systems. Add-ons, by contrast, are folded into the existing structure and therefore exhibit muted incremental profitability effects, even if they contribute to system-wide scale.

H5: Within-rule operational levers at platforms.

Platforms expand throughput and concentrate activity in standardized high-acuity lines, raise measured severity (Case-mix Index, CMI), and reduce per-case costs, while non-Medicare price per discharge does not rise. Add-ons primarily resize scope and costs without comparable severity or unit-cost gains.

Rationale. Centralized clinical documentation improvement (CDI), standardized pathways, and stronger revenue-cycle and reporting infrastructure allow platforms to capture true severity and spread fixed costs. Classic evidence shows that hospitals exploit such within-rule levers by increasing coded severity when reimbursement rules change, rather than by improving quality (Silverman and Skinner, 2004; Dafny, 2005). I test whether PE platforms similarly shift measured severity and service-line mix while keeping commercial prices stable.

H6: Labor is the primary adjustment margin at add-ons.

Add-on targets reduce headcount, with sharper and more persistent declines in core clinical employment, while administrative staffing shows smaller and less systematic adjustments. Platforms make more modest staffing changes, with reductions concentrated in administrative roles and some expansion in core clinical staff.

Rationale. Labor is a flexible operating lever in hospital acquisitions. Gao et al. (2025) show that PE-owned hospitals cut employment, with persistent reductions in administrative staff and shorter-lived declines in core clinical workers. Building on this evidence, I hypothesize that add-ons achieve savings through deeper, longer-lasting cuts to frontline staff, while platforms centralize administrative services and bolster core teams needed to expand high-acuity service lines.

4 Data and Sample

I construct a Hospital-Fund-Year dataset, meticulously constructed by integrating multiple data sources, to evaluate the effectiveness of the roll-up strategy in hospital acquisitions by PE firms. This dataset enables a detailed analysis of how operating performance evolves from initial platform acquisitions to subsequent add-on deals, offering insights into the challenges and dynamics of expanding healthcare portfolios. It provides a comprehensive examination of how post-buyout hospital operations and performance unfold as PE firms scale through sequential acquisitions, revealing key patterns and outcomes in their efforts to integrate and manage multiple hospitals. The final hospital-year panel dataset spans from 1996 to 2019, covering financials, operational metrics, and ownership status. The primary data sources are CMS Cost Reports, CMS Quality Net, PitchBook, and American Hospital Association (AHA) data, supplemented by Preqin, Capital IQ, SDC Platinum, and FactSet.

4.1 Unit of Observation and Accounting Scope

CMS Cost Reports (HCRIS) are filed by the hospital operating entity and are not consolidated at the platform hospital system (the parent that owns the hospitals and often books buyout and add-on financing). Parent-level borrowings can therefore be invisible in hospital filings. Hospital liabilities may show little change, and they can even fall if deal-close refinancing retires operating-company loans. Throughout the analysis, leverage and interest measures are interpreted as hospital-level outcomes, not the parent system's consolidated capital structure.

4.2 Data Sources

The dataset is constructed using the following primary data sources:

CMS Cost Reports

The CMS Cost Reports provide standardized financial and operational information for all Medicare-certified hospitals, including revenues, expenses, assets, liabilities, and staffing. These filings form the backbone of the analysis because they capture hospital-level accounting on a consistent basis across time and facilities. From these reports I construct outcome variables such as interest-to-assets, leverage ratios, operating margin, and related measures of financial performance. They also provide detailed information on expenditures, patient volumes, and personnel, which allows for a comprehensive assessment of hospitals' financial health and operating behavior before and after acquisition.

CMS Quality Net

The CMS Quality Net database reports standardized hospital quality indicators, including clinical outcomes, condition-specific mortality, readmission rates, and patient experience scores from the HCAHPS survey. These measures are critical for evaluating whether changes in ownership affect quality of care and patient satisfaction. By linking these indicators to acquisition events, I assess whether private equity entry is associated with shifts in measurable dimensions of hospital performance beyond financial outcomes.

PitchBook

This dataset provides extensive information on private equity deals, including acquisition details, investor characteristics, and deal structures. This data is pivotal for identifying the timeline of acquisitions, categorizing hospitals based on whether they were acquired as part of the first or subsequent deal by a PE firm, and understanding the strategic motivations behind these investments.

American Hospital Association (AHA) Data

The AHA dataset provides detailed information on hospital systems, including ownership changes and system affiliations. This is crucial for tracking the transitions in hospital ownership, particularly identifying PE involvement and analyzing operational changes over time. By linking this data with CMS records, I construct a longitudinal view of hospital performance, enabling robust analysis of ownership transitions and their operational impacts.

Supplementary Data

I also supplement my dataset with information from multiple databases including Preqin, SDC Platinum, Capital IQ, and FactSet, which provide details on both PE and non-PE hospital acquisitions. These additional sources help ensure that any hospital acquisition history missing from PitchBook is captured, allowing for a more comprehensive sequence of each PE firm's hospital acquisition timeline. Additionally, this data is used to construct a robust control sample of never-acquired hospitals.

4.3 Mapping the Sequence of Hospital Roll-ups

A central challenge in analyzing PE-backed hospital acquisitions is to distinguish the strategic role each deal plays within a roll-up. My study introduces a rule-based framework that classifies

each deal as a standalone, platform, or add-on, based on its relationship to other deals executed by the same sponsor.

Standalone deals are hospital acquisitions that are not connected to any other investment by the same PE sponsor. These typically reflect isolated, single-asset transactions rather than deliberate roll-up strategies. In contrast, platform deals represent the sponsor's initial hospital acquisition within a chain. Add-ons are subsequent targets that can be linked to a preexisting platform hospital acquired by the same sponsor.

To identify these roles, I link fund-level and portfolio-level datasets and examine the full set of hospital acquisitions by each general partner (GP). Some roll-ups occur entirely within a single fund, while others span multiple funds managed by the same sponsor. This fund-level mapping enables consistent classification even when follow-on acquisitions are financed through successor vehicles.

Add-on identification follows a sequence-based rule. Each hospital acquisition is matched to the earliest preceding platform by the same sponsor using cleaned and tokenized hospital and acquirer names. I compute the Jaccard similarity between these token sets and assign add-on status if the similarity exceeds a threshold of 0.70 and the platform predates the candidate target. This method captures both exact and fuzzy matches in naming, allowing for systematic identification of acquisitions that are likely part of a common roll-up strategy. To ensure accuracy, I perform manual verification of all linkages that pass the threshold and resolve ambiguous cases individually.

Once a linkage is confirmed, the add-on inherits a chain identifier from its platform. This chain structure traces the evolution of each roll-up over time and across funds, and it cleanly separates new platform launches from subsequent portfolio expansion.

A practical complication is that the observed history is finite. I restrict the treated sample to hospitals with at least two post-acquisition years so that outcomes can be tracked beyond the deal date. However, because the panel is right-censored at the end of the observation window, some hospitals that appear as standalones during the sample period could in fact be platforms if subsequent add-ons occur just beyond the horizon. This constitutes a form of misclassification bias induced by right-censoring, where early platforms may be incorrectly labeled as standalones simply because their add-ons fall outside the available data window.

To address this, I implement a bounding robustness check in which I reclassify all standalones as platforms and re-estimate the event-study analyses using only platform and add-on samples (see Appendix Figure A6). The substantive conclusions remain the same.

This framework enables an empirical comparison by deal role rather than by ownership in the aggregate. Distinguishing the stages of a roll-up, from platform formation to add-on expansion, allows the analysis to track the staging of value creation across financing, balance-

sheet adjustment, and operations, and to assess whether improvements replicate at later targets within a roll-up.

4.4 Sample Construction

The final dataset consists of 848 unique hospitals acquired by private equity (PE) firms. Among these, 785 participated in roll-up activity by PE sponsors, while 63 hospitals were acquired in one-off stand-alone transactions with no subsequent add-on activity during the study window. Within the 785 roll-up hospitals, 469 are classified as platform acquisitions and 316 as add-on acquisitions executed after a platform had been established by the same sponsor. The platform versus add-on designation is based on deal sequencing at the sponsor-hospital level and reflects whether a target initiates the sponsor's presence in the platform system or is later integrated into that platform as an add-on.

This subset of 785 roll-up hospitals, with an explicit distinction between the initial platform and subsequent add-ons, is central for studying how value creation unfolds over the roll-up sequence. At the site level, separating platform from add-on deals allows a test of whether early platform hospital gains are sustained at later-acquired add-on hospitals or whether they fade. In particular, the roll-up subsample allows me to trace balance-sheet adjustments, operating performance, staffing composition, and throughput over time as sponsors expand their portfolios, while the 63 stand-alone acquisitions provide a contrast where no roll-up expansion occurs.

Empirically, I use two complementary samples aligned to the two identification strategies. For the collapsed DID and the dynamic DID (event study), I build a matched panel at the hospital site level around each PE-treated hospital's baseline year (the year prior to acquisition). Matching uses three nearest neighbors by Mahalanobis distance with exact matching on ownership, teaching status, metro status, and Census division. Control hospitals inherit the treated hospital's baseline plus one year as a mock treatment year to align event time. I restrict treated hospitals to first acquisitions in 1998 to 2017 so that at least two pre and two post years are observed, and I form matching pools from pre-acquisition years 1997 to 2016. For the instrumental-variables design, which uses state-year variation in the CPOM Regulation Index, I estimate on the full, unmatched hospital panel with hospital and year fixed effects. Using the full sample preserves the complete set of potential compliers and the full cross-state timing in the instrument, which improves first-stage power and keeps the compliance margin interpretable at the market level. To avoid confounding from pandemic-era disruptions to financing, staffing, utilization, and acquisition timing, I truncate the outcome panel at 2019 and exclude observations from 2020 onward.

Across specifications, control variables are defined consistently. Hospital-level controls include log number of beds, Medicare share, Medicaid share, outpatient share, and case-mix index; county controls include log population, log fair-market rent, and the shares of Black and Asian residents. The working panel spans 1996 to 2019 for outcomes, with pre-periods and post-periods aligned to each hospital's acquisition timing. Stand-alone, platform, and add-on indicators are mutually exclusive by design. Further details on data construction are provided in Appendix C.

4.5 Summary Statistics

In Table 1, I compare baseline characteristics of hospitals acquired by private equity with those never acquired. Statistics are averaged over the three years preceding acquisition to provide a balanced view of pre-acquisition profiles. The goal is not to establish causal drivers but to document unconditional differences that highlight selection patterns and motivate the subsequent analysis.

Financing and balance sheet indicators reveal clear distinctions. PE-acquired hospitals face heavier interest burdens, with higher borrowing rates and wider spreads over LIBOR. Leverage ratios are similar on average, but PE targets rely more on non-interest-bearing liabilities and somewhat less on interest-bearing debt relative to assets. Capital expenditures are modestly lower, consistent with selective investment prior to acquisition. Overall, PE targets enter acquisition with financing structures that imply tighter debt-service pressures and greater exposure to borrowing costs.

Profitability also diverges sharply. Relative to never-acquired hospitals, PE targets report higher return on assets, higher operating income relative to assets, and stronger operating margins. These differences suggest that investors are drawn to hospitals already demonstrating stronger financial performance, which provides a natural starting point for examining how those advantages evolve after acquisition.

Operational outcomes align with these financial patterns. PE-acquired hospitals are substantially larger, with higher total costs, more adjusted discharges, and higher case-mix indices. Even after case-mix adjustment, they report significantly more Medicare discharges and higher Medicare inpatient costs, while non-Medicare prices per discharge are only slightly higher. Costs per adjusted discharge are above those of never-acquired hospitals, reflecting more resource-intensive operations.

Employment and wages scale accordingly. PE-acquired hospitals employ more staff overall, especially in core clinical roles, and pay higher wages across both core and administrative categories. Payroll and staffing intensity therefore match their larger size and higher throughput,

implying broader and more expensive labor cost structures prior to acquisition.

Hospital characteristics and demographics round out the picture. PE targets are larger in bed capacity, serve somewhat more Medicare patients and somewhat fewer Medicaid patients, and rely less on outpatient revenue. They also serve communities with higher proportions of Black and Asian patients and operate in areas with slightly higher rental prices, reflecting local economic conditions.

Breakout by deal role. Table 2 reports pre-acquisition means by deal role (stand-alone, platform, add-on) and pairwise differences. Financing gaps stand out: platforms enter with much lower leverage than add-on targets, although their cost of debt is higher. Add-ons lean more heavily on interest-bearing debt, while platforms carry a smaller debt share but at somewhat higher borrowing rates and spreads. These distinctions underscore the financial positioning that underpins each role in the roll-up.

Profitability gaps are clear, with platforms positioned above add-ons but below stand-alones. The platform–add-on gap is wide and statistically significant, underscoring the stronger pre-acquisition performance of platforms. Operationally, platforms are largest on throughput, followed by add-ons, while stand-alones are smaller on both costs and discharges. Costs per adjusted discharge are highest at stand-alones and lower at platforms and add-ons, consistent with scale advantages. Case-mix and price measures track these differences: stand-alones have the highest CMI, while platforms and add-ons report higher Medicare volumes and costs, with broadly similar non-Medicare prices.

Employment patterns reflect these roles. Add-ons employ more core and administrative staff than platforms, while stand-alones are leaner across categories. Platforms, however, pay higher administrative wages. Hospital characteristics and demographics further differentiate groups: platforms are largest by bed count, stand-alones serve a higher Medicare share, and add-ons more frequently serve Medicaid patients. Outpatient revenue shares are highest for stand-alones, while platforms and add-ons depend more on inpatient activity. Platforms also serve communities with higher Black population shares than stand-alones.

These descriptive statistics underscore that selection into stand-alone, platform, and add-on roles is not random. Platforms combine scale with relatively clean balance sheets, add-ons are weaker in profitability and more debt-reliant, and stand-alones are small but profitable. Recognizing these differences is essential for interpreting post-acquisition outcomes, since part of the variation reflects strategic target selection rather than ownership effects.

The summary statistics therefore show that PE-acquired hospitals differ systematically from never-acquired hospitals and, within the acquired group, by deal role. These unconditional differences highlight the starting advantages of PE targets but should not be interpreted as

causal or definitive selection rules. Later, I examine acquisition probability more formally using a logistic regression specification (Table 4), which conditions on hospital and county characteristics and clarifies how leverage and profitability relate to acquisition likelihood across stand-alone, platform, and add-on deals.

5 Empirical Methodology

To address potential confounding factors and baseline differences, as well as to explore potential selection biases observed in pre-acquisition characteristics, I employ a nearest-neighbor matching approach. This methodology is consistent with existing literature on hospital acquisitions (Schmitt, 2017; Prager and Schmitt, 2021; Liu, 2022; Gao et al., 2025), allowing for a robust comparison of post-acquisition outcomes.

Table 1 reveals systematic differences in financial health, profitability, operations, and demographic targeting between PE-acquired hospitals and others, suggesting that PE firms may selectively target hospitals based on specific pre-acquisition characteristics. This selective targeting could potentially skew comparisons of post-acquisition outcomes. In addition to creating a mathced control group for the PE acquired hospitals, to account for the variations across different PE acquisition sequences, I create separate matched control samples for each category: Stand-alone, Platform and Add-on. This distinction is essential, as each acquisition sequence likely follows unique strategic objectives and operates under different conditions.

By constructing control samples for each acquisition category, the matching approach ensures that comparisons between PE-acquired hospitals and their counterparts are based on hospitals with similar pre-acquisition characteristics. This process effectively mitigates potential selection bias arising from baseline differences and provides a more nuanced understanding of how the roll-up strategy impacts hospital outcomes. By distinguishing between initial platform acquisitions and subsequent add-on deals, the analysis reveals how PE firms balance distinct operational objectives across their portfolio. The contrasting strategies for platform versus subsequent add-on acquisitions highlight the varied strategic considerations that drive performance across different stages of portfolio expansion.

Additionally, nearest-neighbor matching not only balances characteristics across groups but also sheds light on the criteria likely used by PE firms when selecting hospital targets, such as revenue potential or financial health. This method offers a clearer perspective on the real impact of PE acquisitions on hospital performance and the broader implications of their roll-up strategies.

5.1 Construction of Matched Sample

The matched control group is constructed by excluding from the pool any hospitals that experienced an acquisition during the observation period. For each treated hospital, up to three nearest-neighbor controls are identified using the Mahalanobis distance metric. Matching covariates include hospital characteristics such as the log of total beds, the share of Medicare and Medicaid discharges, the ratio of outpatient charges, and pre-acquisition profitability. To further improve comparability, matches are restricted to hospitals with the same for-profit status, teaching status, census division, and metropolitan status as the treated hospital. These restrictions ensure that matched comparisons reflect not only similar regional and urban–rural environments but also comparable ownership form and institutional role. Matching is performed with replacement, allowing the same hospital to serve as a control for multiple treated observations when it provides the closest fit across covariates.

The effectiveness of the matching procedure is evaluated by calculating standardized differences between treated and control hospitals for the covariates included in the matching algorithm. Figure 1 presents these standardized differences before and after matching. The figure demonstrates that matching substantially reduces imbalances across the targeted variables, with differences that were large in the raw sample shrinking considerably in the matched design. This provides clear evidence that the matching process achieves a closer alignment between PE-acquired hospitals and their matched controls.

Table 3 reports descriptive statistics for the full matched dataset, pooling PE-acquired hospitals with their matched controls. The table presents means, standard deviations, and percentiles for a wide range of financial, operational, staffing, and demographic variables. Because the table is pooled, it does not directly display treated–control differences, but instead offers a detailed overview of the distributions of hospital characteristics in the analytic sample used for the post-matching analysis. Taken together with Figure 1, which documents the reduction in standardized differences, the table provides a comprehensive picture of the dataset that serves as the basis for the subsequent difference-in-differences and event study estimations.

In sum, the construction of the matched sample addresses the unconditional imbalances highlighted earlier in Tables 1 and 2. By creating a set of control hospitals that closely resemble PE-acquired hospitals on key observable characteristics, the matching design strengthens the credibility of the empirical strategy and provides a more appropriate counterfactual for assessing post-acquisition changes in hospital outcomes.

5.2 Selection Across Acquisition Types

While the Mahalanobis matching procedure aims to balance hospital characteristics such as total beds, Medicare and Medicaid shares, outpatient intensity, and profitability, it is important to acknowledge that multi-deal PE firms may shift their selection strategies across acquisition rounds. Figure 1, particularly panels (c) and (d), shows that hospitals acquired in platform deals exhibit more extreme standardized differences across several variables than those acquired as add-ons.

For example, prior to matching, the standardized difference in Medicaid share is approximately 0.4 for platform acquisitions but only 0.1 for add-ons. The outpatient share shows a similar pattern, with a difference of about -0.4 for platform targets versus -0.2 for add-ons. The log of total beds differs by about 0.4 for platform targets, compared to 0.2 for add-ons. These gaps suggest that platform hospitals tend to have more distinct operational profiles relative to their matched controls, whereas add-ons are more similar to the control group.

One interpretation is that PE firms prioritize hospitals with more extreme operational characteristics or greater potential in their initial acquisitions, then shift toward more complementary targets in follow-on deals. Alternatively, the firm's selection strategy may evolve as it gains experience, becoming more systematic or opportunistic over time.

To further explore selection dynamics, I estimate the likelihood of PE acquisition using a logistic regression model:

$$\Pr(\texttt{Acquired}_{i,t} = 1) = \Lambda\left(\alpha + \beta_1 \texttt{Leverage}_{i,t-1} + \beta_2 \texttt{Margin}_{i,t-1} + X_{i,t}'\gamma + \epsilon_{i,t}\right) \tag{1}$$

where $\Lambda(\cdot)$ denotes the logistic function, and X_{it} includes hospital and county-level controls. I estimate this model separately for all PE acquisitions and by deal type: standalone, platform, and add-on.

Including this step serves two purposes. First, it provides a transparent account of how observable hospital characteristics correlate with the likelihood of acquisition, which is essential for understanding the environment in which subsequent difference-in-differences estimates are obtained. Without such a model, it would be difficult to distinguish whether post-acquisition changes reflect causal effects of ownership or simply reflect pre-existing characteristics that make some hospitals more attractive targets than others. Second, examining selection explicitly by deal type allows the methodology to align with the institutional reality of roll-up strategies. Platform acquisitions and add-on acquisitions represent sequential stages of this process, with platforms serving as anchor investments and add-ons representing subsequent integration of additional hospitals. Standalone acquisitions, by contrast, are not part of this progression and reflect a different investment strategy.

The estimates reported in Table 4 indicate that the correlates of acquisition vary systematically across these categories. Selection should not be viewed only as a potential source of bias but also as a channel of value creation. By targeting hospitals whose financial structure, profitability, or market position make them suitable for integration, private equity firms embed strategic choices at the moment of acquisition that shape both financing and operational outcomes. Recognizing these systematic differences is therefore an important component of the empirical design and provides the foundation for interpreting the results that follow.

5.3 Baseline Model

I estimate the effect of private equity acquisition on hospital outcomes with a difference-in-differences design that separates deals by role in the roll-up sequence and by post-event horizon. Let i index hospitals and t years. Each treated hospital is classified as stand-alone (a one-off acquisition not part of a roll-up), platform (the first deal in a multi-hospital roll-up), or add-on (a subsequent acquisition by the same sponsor). Event time is $g_{i,t}$, measured in years relative to the first PE targeting year. For each outcome block, I form two non-overlapping post windows: short run $[0, 4]$ and long run $[5, 8]$. I then estimate the short-run and long-run specifications separately on the corresponding analysis samples.

For a generic post window $w \in \{\text{SR}, \text{LR}\}$, the estimating equation is

$$Y_{i,t} = \phi_S^w\big(\texttt{Stand-alone}_i \times \text{Post}_{i,t}^w\big) + \phi_P^w\big(\texttt{Platform}_i \times \text{Post}_{i,t}^w\big) + \phi_A^w\big(\texttt{Add-on}_i \times \text{Post}_{i,t}^w\big) + \mathbf{X}_{i,t}'\boldsymbol{\beta} + \alpha_i + \mu_{m(i)} + \kappa_{g_{i,t}} + \varepsilon_{i,t}. \tag{2}$$

where $\text{Post}_{i,t}^{\text{SR}} = 1\{0 \le g_{i,t} \le 4\}$ for the short run and $\text{Post}_{i,t}^{\text{LR}} = 1\{5 \le g_{i,t} \le 8\}$ for the long run. The vector $\mathbf{X}_{i,t}$ includes hospital controls: log(beds), Medicare share, Medicaid share, outpatient share, and case-mix index (CMI); and county controls: log(population), log(fair-market rent), Black share, and Asian share.

Hospital fixed effects α_i absorb time-invariant heterogeneity. Match-group fixed effects $\mu_{m(i)}$ absorb differences across matched sets. Event-time fixed effects $\kappa_{g_{i,t}}$ flexibly control for shocks common to all units at the same relative time g. Standard errors are two-way clustered by hospital and by match group to allow for serial correlation within hospitals and cross-sectional dependence within matched sets. This is important because treatment is assigned at the hospital level and comparisons are organized within matched cohorts.[5]

The coefficients ϕ_d^w for $d \in \{S, P, A\}$ capture average treatment effects by deal type within window w. The platform parameters ϕ_P^w identify the anchor-deal channel. The add-on pa-

[5]Results are robust to clustering at the hospital level only.

rameters ϕ_A^w capture the incremental contribution of subsequent targets once folded into the platform. Stand-alone parameters ϕ_S^w are reported for completeness but interpreted cautiously given smaller samples.

5.4 Instrumenting PE Acquisitions Using CPOM Reforms

To strengthen the causal interpretation of post-acquisition effects within roll-up sequences, I implement an instrumental-variables (IV) strategy that exploits cross-state changes in the Corporate Practice of Medicine (CPOM) doctrine. CPOM rules restrict non-physician corporations from employing physicians or controlling clinical practice, and easing these rules reduces legal and transactional frictions for private-equity entry and integration. I use the CPOM Regulation Index from Liu (2022), a state-year measure in which higher values indicate more permissive CPOM.[6]

Because the research question concerns sequencing within roll-ups, I estimate first stages separately by deal role, distinguishing stand-alone, platform, and add-on targets, rather than treating private-equity entry as a single, homogeneous event. Let $D_{it}^g \in \{0,1\}$ indicate whether hospital i in year t is exposed through deal role $g \in \{\text{PE target, Stand-alone, Platform, Add-on}\}$. Denote by $\text{CPOM}_{s(i),t}$ the CPOM index for the state of hospital i. The first stage for role g is

$$D_{it}^g = \pi_g \, \text{CPOM}_{s(i),t} + \mathbf{X}_{it}'\Gamma_g + \alpha_i + \tau_t + u_{it}^g, \tag{3}$$

where $\mathbf{X}_{it}$ includes hospital controls (log beds, Medicare share, Medicaid share, outpatient share, case-mix index) and county controls (log population, log fair-market rent, Black share, Asian share). I include hospital fixed effects α_i and year fixed effects τ_t, and estimate (3) separately for each deal role g. Standard errors are clustered by provider. Kleibergen–Paap statistics are reported with the first stage in Table 12.

Given (3), I estimate role-specific IV models that replace the endogenous indicator with its fitted value. For outcome Y_{it}, for example ROA, OI/TA, and financial leverage, the second stage is

$$Y_{it} = \beta_g \, \widehat{D}_{it}^g + \mathbf{X}_{it}'\delta + \alpha_i + \tau_t + \varepsilon_{it}, \tag{4}$$

estimated separately for $g \in \{\text{PE target, Stand-alone, Platform, Add-on}\}$. I use LIML with a Fuller(1) correction, and cluster standard errors by provider. The coefficients β_g are local

[6]The CPOM Regulation Index in Liu (2022) codifies state permissiveness based on statutes, attorney-general opinions, and case law. Higher values denote more lenient CPOM.

average treatment effects for hospitals whose acquisition status at deal role g is shifted by CPOM.

5.5 Dynamic Effects Model

For key outcomes, I complement the baseline short– and long–run estimates with an event–study specification that traces dynamic responses around the acquisition year. To align with staggered timing and to keep composition stable, I estimate separate event studies within each matched sample for: all PE targets, stand-alone targets, platform targets, and add-on targets. Within each sample, I keep the matched groups that contain at least one treated hospital, retain never-treated hospitals in those groups as controls, and require at least three pre-treatment observations per hospital. I implement strict binning of event time to the interval $[-3, +6]$, and I omit the year immediately prior to treatment as the reference period.

Let K_{it} denote the event time (year relative to the first PE targeting year for hospital i), and define $F_{\ell,it} = \mathbf{1}\{K_{it} = -\ell\}$ for $\ell \in \{2, 3\}$ and $L_{\ell,it} = \mathbf{1}\{K_{it} = \ell\}$ for $\ell \in \{0, \ldots, 6\}$, with tail bins at -3 and $+6$. The event–study regression for outcome Y_{it} is

$$Y_{it} = \sum_{\ell=2}^{3} \theta_{-\ell} F_{\ell,it} + \sum_{\ell=0}^{6} \theta_{\ell} L_{\ell,it} + \mathbf{X}_{it}'\beta + \alpha_i + \kappa_{\Delta t(i)} + \mu_{m(i)} + \varepsilon_{it}, \tag{5}$$

where α_i are hospital fixed effects, $\kappa_{\Delta t(i)}$ are event–time fixed effects based on years relative to acquisition (implemented via `yeargap`), and $\mu_{m(i)}$ are match–ID fixed effects. The control vector $\mathbf{X}_{it}$ includes hospital controls (log beds, Medicare share, Medicaid share, outpatient share, case–mix index) and county controls (log population, log fair–market rent, Black share, Asian share). Estimation uses analytical weights when available and equals one otherwise, and standard errors are two–way clustered by hospital and match–ID. The omitted category is $K_{it} = -1$, so the coefficients $\theta_{-\ell}$ and θ_{ℓ} are relative to the year before treatment. Inference on pre–treatment coefficients $\{\theta_{-3}, \theta_{-2}\}$ provides a direct check of parallel trends inside each matched sample.

All dynamic specifications mirror the baseline in covariates and fixed effects, and the same sample construction ensures that pre– and post–period comparisons are drawn within the matched groups defined for each deal type. Results are visualized as coefficient paths with pointwise confidence intervals; they are broadly consistent with the windowed DID estimates reported earlier.[7]

[7] Estimates are robust to using the interaction–weighted estimator of Sun and Abraham (2020) with the same matched samples.

6 Main Results

6.1 Baseline Results

I estimate short-run (years 0–4) and long-run (years 5–8) effects using the windowed difference-in-differences specification in (2), with separate post indicators for stand-alone, platform, and add-on targets. All models include the hospital and county controls described above, including the case-mix index, and absorb hospital fixed effects, event-time fixed effects by year gap, and match-group fixed effects. Standard errors are two-way clustered by hospital and match-ID. Inference is robust to clustering at the hospital level alone. Because some stand-alone targets may later become platforms outside the sample window, I treat stand-alone dynamics as robustness rather than a core result.

I build two financing measures from the hospital cost reports and the deal-linked data.[8] First, the effective financing rate on liabilities that actually bear interest,

$$r_{it}^{\mathrm{IB}} \equiv \frac{\text{Interest Expense}_{it}}{\text{Interest-Bearing Debt}_{it}},$$

is a direct measure of the hospital's cost of debt, as the denominator excludes non–interest-bearing obligations. I define interest-bearing debt as the sum of mortgages, notes, and unsecured loans, and compute these ratios only when denominators are positive.

Second, I construct a market-adjusted spread,

$$s_{it} \equiv r_{it}^{\mathrm{IB}} - r_{t}^{\mathrm{LIBOR,3M}},$$

which nets out movements in short-term funding conditions using the three-month LIBOR rate $r_t^{\mathrm{LIBOR,3M}}$.[9] The resulting spread captures borrower-specific credit terms, fees, and covenant conditions over the prevailing interbank benchmark.

Consistent with H2, platforms show immediate repricing. In years 0–4 after platform acquisition, the effective rate on interest-bearing debt falls by 1.7 percentage points, and the three-month LIBOR-adjusted spread narrows by 1.7 percentage points (170 bps). These differences are statistically significant. None of these platform effects persist into years 5–8, which

[8] All financing measures are derived from hospital-level cost reports and therefore exclude parent system-level obligations. These series do not consolidate platform system facilities; they capture debt retirement, equity adjustments, and asset revaluation at the operating entity (hospital) rather than the parent system's consolidated liabilities.

[9] The three-month LIBOR was the standard benchmark for leveraged loans and private equity credit facilities during the sample period (1996–2019), typically quoted as a floating rate plus a fixed spread (e.g., LIBOR + 500 basis points). LIBOR was discontinued and replaced by the Secured Overnight Financing Rate (SOFR) beginning in 2022, after the end of the sample window.

indicates that repricing is concentrated at deal close rather than diffusing gradually over time (Table 5).

Add-ons move in the opposite direction at entry. In years 0–4, the effective rate on interest-bearing debt rises by 1.8 percentage points and the three-month LIBOR-adjusted spread widens by 2.3 percentage points (230 bps), both statistically significant, with little evidence of longer-run change. This pattern is consistent with add-ons being funded under the platform facility at the then-current price and with upfront costs that flow through interest expense, so follow-on hospitals do not inherit the platform's repricing.

The mechanism behind these results lies in how private equity sponsors structure credit agreements. The platform loan is priced at origination against collateral and observable risk, and the resulting credit agreement typically governs the platform parent and its restricted subsidiaries as a single borrower group.[10] The agreement usually includes acquisition capacity so that subsequent add-ons can be financed as incremental draws without a fresh, hospital-specific origination.[11] The interest margin follows a leverage-based pricing schedule that links the spread to the borrower group's leverage ratio at the time funds are drawn.[12] When an add-on closes, the sponsor typically draws additional debt under this schedule. In the short run the group's leverage ratio often increases at funding, which implies a higher applicable margin on the incremental borrowing. In addition, upfront costs such as original issue discount and arranger fees are amortized through interest expense rather than capitalized, which raises the measured r_{it}^{IB} in the add-on's early years.[13] These institutional features reconcile three empirical facts in my data. First, platforms obtain cheaper financing at deal close because the origination is underwritten on platform collateral and observable risk, and spreads are set at that time. Second, add-ons do not receive a new, cheaper origination; they are financed under the existing agreement at the then-current tier, and fee amortization raises the measured effective rate, so I observe higher r_{it}^{IB} and wider spreads for add-ons in years 0–4. Third, platform results in years 5–8 need not mirror add-on results in years 0–4 because the post windows are defined relative

[10] By borrower group I mean the legal obligors and guarantors under the same facility that are consolidated for covenant calculations. In a roll-up, this is the platform parent and the restricted subsidiaries after they accede to the facility. The leverage ratio in the agreement is computed for this group, often as total net debt divided by EBITDA. This group-level concept differs from my hospital-level liabilities-to-assets measure recorded in cost reports.

[11] Acquisition capacity is provided through features such as an incremental tranche, an accordion, or a delayed-draw term loan. The incremental is usually subject to a most-favored-nation clause that caps, but does not eliminate, spread differences relative to the original tranche.

[12] For example, the agreement may specify tiers such as a 300 basis point margin if net debt to EBITDA is at or below 3.5, 325 basis points between 3.5 and 4.5, and 350 basis points above 4.5. Movement across tiers does not require renegotiation; the applicable margin changes mechanically with the measured ratio.

[13] r_{it}^{IB} = interest expense (accrual-basis; includes OID/fee amortization and possible PIK accruals) divided by hospital-level interest-bearing debt. Because cost reports exclude parent system debt, non-cash interest can lift the measured rate at add-ons even without local coupon changes or added hospital-level debt.

to each hospital's own acquisition year, accounting is recorded at the entity that carries the borrowing, and the platform hospital is concurrently deleveraging and expanding assets, which pulls down interest over assets even if the group-level pricing grid steps up around an add-on.[14]

Balance-sheet estimates in Table 6 align with upfront repricing followed by staged rebalancing at platforms, as in H3. Platform leverage falls by 15.7 percentage points in the short run and by 27.5 percentage points in the long run, while capital expenditures relative to assets[15] increase by 1.7 percentage points in the short run and 3.4 percentage points in the long run, with no systematic change in cash holdings. These movements are consistent with the recapitalization of platform hospitals at deal close, followed by the deployment of financing into investment projects rather than the accumulation of liquidity. The supporting evidence in Table A1 shows that liabilities decline while equity strengthens, explaining the ratio dynamics and confirming that the balance-sheet effects are driven by rebalancing rather than accounting artifacts.[16]

Add-ons show the mirror image at entry. Leverage rises by 13.6 percentage points and cash-to-assets declines by about 1.1 percentage points in the short run, while capex responses are limited and imprecise. The appendix levels table confirms that this pattern is not driven by rapid balance-sheet expansion: liabilities fall modestly, but equity and assets contract more sharply, pushing the liabilities-to-assets ratio upward even without new reported debt. This is consistent with add-ons being financed through incremental borrowing at the parent borrower group, which does not appear on the hospital's own cost report, combined with equity write-downs and asset adjustments that thin local balance sheets. Centralized treasury management can also reduce cash holdings if working capital is swept to the parent, consistent with the decline in cash-to-assets.[17]

Taken together, these results corroborate H2 and H3. Platforms secure cheaper debt at deal close and rebalance by reducing liabilities and raising equity, which coincides with sustained

[14]The post-deal windows are defined relative to each hospital's acquisition year. If an add-on is acquired in calendar year $t+3$ after the platform, the add-on's 0–4 window starts at that date while the platform hospital is already several years into its own post period. Interest and fees associated with the add-on are recorded at the add-on entity, so they can raise r_{it}^{IB} for the add-on without affecting the platform hospital's ratios in the same calendar years.

[15]I construct capital expenditures from cost-report purchase flows for land, land improvements, buildings and fixtures, building improvements, fixed equipment, and movable equipment.

[16]All balance-sheet outcomes are measured on the hospital's own cost report. These hospital-level series do not consolidate parent system facilities; they capture the local effects of recapitalization such as debt retirement, equity adjustments, and asset revaluation. The leverage ratio should therefore be interpreted as a hospital-level outcome rather than a direct measure of the consolidated borrower's capital structure.

[17]In roll-ups, the term loan and revolver are typically raised at the parent borrower group and secured by hospitals in the system. These obligations do not always appear on each hospital's cost report. By contrast, equity write-downs and asset revaluations at the acquired hospital are recorded locally. This accounting treatment explains why leverage ratios rise for add-ons even as reported liabilities decline.

capital expenditure. Add-ons face the opposite near-term conditions: thinner equity bases, lower cash, and higher leverage ratios, with little evidence of immediate reinvestment. The divergence highlights the staged nature of roll-up financing: the platform anchors credit terms and balance-sheet improvements, while add-ons are folded in under the existing facility without hospital-level repricing or equity support.

Liability mix in Table 7 lines up cleanly with the pricing and balance-sheet patterns already documented. For platforms, in years 5 to 8 the ratio of interest-bearing debt to assets rises by about 7.9 percentage points, the interest-bearing share of liabilities rises by about 13.3 percentage points, and non-interest-bearing liabilities to assets fall by about 12.4 percentage points. Because total leverage equals IB Debt/Assets plus NIBL/Assets, the fall in non-interest obligations more than offsets the rise in IB Debt, so net leverage declines. This is consistent with cheaper financing at origination: sponsors reduce payables, accrued expenses, and other working-capital liabilities while replacing part of the mix with priced debt, tilting composition toward IB Debt even as total liabilities shrink. The freed balance-sheet capacity shows up as sustained capital expenditure in the balance-sheet block. Add-ons look different at entry. In years 0 to 4 they show a clear increase in NIBL/Assets of about 11.4 percentage points, with little change in the interest-bearing measures. That pattern matches the institutional setting in which incremental debt is drawn at the parent facility and does not appear on the add-on's cost report, while intercompany payables and other non-interest obligations expand and cash is swept centrally. The mix results therefore reinforce the staged roll-up mechanism: platforms anchor credit terms and rebalance toward interest-bearing debt as their liabilities shrink, whereas add-ons' near-term balance-sheet pressure surfaces locally in non-interest obligations rather than in reported hospital-level debt. These liability-side adjustments complement the financing and balance-sheet results above and are consistent with hypotheses H2 and H3.

Table 8 reveals that platforms experience concentrated profitability gains, consistent with H4. Within the first four years, platforms register an increase in return on assets of 6.2 percentage points and a marginally significant increase in operating income over assets of 3.5 percentage points. By years five through eight, gains broaden: operating margin rises by 5.9 percentage points, operating income over assets by 13.3 percentage points, and return on assets by 15.3 percentage points. Add-ons show a statistically significant short-run decline in operating income over assets of 5.4 percentage points, with no meaningful recovery by years five through eight, and stand-alone deals display no statistically significant changes in any window . Read together with the financing and balance-sheet results, these patterns indicate that platforms convert cheaper debt and higher investment into broad-based profitability improvements over time, whereas add-ons primarily adjust balance sheets without generating higher returns.

Within-rule revenue strategies are actions that operate inside existing Medicare and Med-

icaid payment formulas, not increases in negotiated prices. Examples include clinical documentation improvement (CDI), concentrating the service mix in lines with stronger diagnosis-related group (DRG) and ambulatory payment classification margins (APC), standardizing care pathways, tightening revenue-cycle processes, making compliant site-of-service choices, and managing denials.

Operating scale and unit costs provide direct evidence of how platforms exploit within-rule levers to expand output efficiently, consistent with H5. As shown in Table A3, platforms increase throughput meaningfully over time: adjusted discharges rise by about 16% in the long run, while total cost grows by roughly 12%. Because volume expands faster than cost, total cost per adjusted discharge declines by about 4% in the long run (marginally significant). This pattern indicates that efficiency gains arise from higher utilization and fixed-cost spreading rather than price increases. Consistent with this interpretation, Table 10 shows that non-Medicare price per discharge does not increase. Platforms achieve higher throughput and lower per-unit cost while reimbursement levels remain stable.

The case-mix adjusted estimates in Table 10 further support this within-rule mechanism. "CMI-adjusted" indicates that each outcome is normalized by the hospital's Case-Mix Index (CMI), which scales discharges and costs by patient complexity. This adjustment isolates operational changes from shifts in patient acuity or coding intensity. Platform hospitals expand in service lines where documentation and standardization yield higher reimbursement weights. The case-mix index rises by about 1.8% in the short run and 3.4% in the long run, and Medicare discharges increase sharply in the long run by roughly 21%. Medicare inpatient costs rise by approximately 7% in the short run and 18% in the long run, while non-Medicare price per discharge remains statistically unchanged. These movements show that platforms treat more and slightly sicker patients over time without evidence of higher reimbursement per case, consistent with coding improvements, standardized care processes, and fixed-cost absorption within existing payment formulas.

Add-on hospitals move in the opposite direction across both sets of outcomes. In Table A3, total cost falls by about 23% in the short run and by roughly 16% in the long run, while adjusted discharges decline by 21% and 13%. In Table 10, Medicare discharges fall by about 15% in the short run and 11% in the long run, Medicare inpatient costs decline by roughly 17% in both horizons, and the case-mix index decreases by 2.5–4%. These patterns suggest consolidation rather than efficiency: activity contracts and per-unit costs remain largely unchanged, consistent with scope rationalization and centralization at the platform hub rather than local growth.

Appendix service-line evidence supports this interpretation.[18] Platform hospitals intensify

[18]See Table A4, Table A5, and Table A6.

activity in high-acuity areas such as intensive care and laboratory services and report lower cost-to-charge ratios, consistent with improved revenue-cycle management and tighter cost control.

Labor adjustments match this story and support H6.[19] As shown in Table 11, platforms reduce administrative employment sharply, by about 26% in the short run and 16% in the long run, while core clinical employment increases by 15% and 13%. On the wage side, platforms show clear compositional adjustments: administrative wages rise by about 16–17%, while core wages decline by roughly 20% in the short run and 12% in the long run. This mix of expanding clinical staff and higher-paid administrative teams, offset by lower pay in core roles, reduces average labor cost per unit without across-the-board pay cuts and is consistent with centralized back-office functions and targeted clinical staffing at the platform. Add-ons follow a different path: staffing declines across both categories, with core clinical employment falling by about 25% in the short run and 29% in the long run, while administrative employment declines by 21% and 14%. Wage effects at add-ons are more muted, with no systematic changes in either core or administrative pay.

While the primary focus of this paper is on financing and operations, it is also important to consider whether private equity ownership alters the quality of care. The quality-related results are mixed and generally modest in size. Clinical outcomes show no consistent pattern across conditions: platform acquisitions are associated with some reductions in heart attack readmissions, while mortality effects at both platform and add-on hospitals remain close to zero, providing little evidence of systematic improvement or deterioration (Figure A2). Patient satisfaction responses display clearer negative movements in a few domains, such as overall ratings, cleanliness, and likelihood to recommend, particularly at platform hospitals, but many other measures of communication, responsiveness, and pain management remain unchanged. These findings suggest that private equity entry does not produce broad declines in clinical or experiential quality, although certain aspects of the hospital environment and perceived care appear to weaken after acquisition (Figure A3).

The baseline estimates point to a staged value-creation process that begins with selective entry and unfolds through financing advantages and within-rule operational levers. Sponsors establish platforms by acquiring low-leverage, higher-margin hospitals that maximize collateral and visible performance. This positioning unlocks cheaper, scalable credit facilities at close, producing an immediate decline in borrowing costs at platforms but not at add-ons. Early actions emphasize signals valued by lenders and investors such as collateral quality, balance-sheet strength, and margin visibility rather than quick local turnarounds. These facilities

[19] Following Gao et al. (2025), I define *core workers* as physicians, nurses, and pharmacists (including related categories such as anesthetists, interns and residents, nursing administration, and pharmacy staff) and *administrative workers* as administrative and general staff (including contracted employees).

then fund balance-sheet rebalancing and the build-out of shared capabilities, including clinical documentation improvement, standardized care pathways, and centralized revenue-cycle infrastructure. The sequence of higher equity shares and capital expenditures first, followed by throughput growth, lower per-case costs in high-acuity lines, and ultimately stronger profitability at platforms, is consistent with this mechanism. Add-ons, by contrast, are absorbed into the platform's facility without new underwriting. They do not trigger debt repricing and contribute mainly through consolidation and labor reductions that contain costs without comparable margin gains. Quality effects are limited. Clinical outcomes remain largely unchanged, while some patient satisfaction measures show modest declines, suggesting that efficiency efforts and standardization may come at the expense of certain aspects of patient experience.

6.2 IV Results: CPOM Regulation Index

Table 12 shows that the CPOM Regulation Index is a relevant shifter for overall PE targeting and, in particular, for platform entry. The first stage is statistically meaningful for PE Target and Platform (Kleibergen–Paap $F = 9.60$ and $F = 8.78$), but weak for Stand-alone and Add-on. This pattern is informative: CPOM rules matter most at the initiation of a roll-up, when sponsors decide whether and where to establish a platform, and are far less predictive of subsequent add-ons that are folded into an existing system. A lenient CPOM environment lowers the legal barriers to employing physicians and integrating their billing into the hospital's revenue cycle, allowing PE firms to form a compliant management structure that can later absorb additional facilities. Once this structure is in place, subsequent add-ons operate under the parent system's established legal and billing framework, making state-level CPOM variation largely irrelevant for follow-on acquisitions.

Turning to the second stage in Table 13, instrumented platform exposure is associated with stronger balance sheets and higher operating performance for compliers. For *Platform* targets, ROA increases ($t = 2.21$) and OI/TA rises ($t = 1.67$). On the liabilities side, leverage falls ($t = -2.02$). Aggregating to *PE Target* yields the same qualitative pattern: ROA and OI/TA increase and leverage declines, all estimated with hospital and year fixed effects and the full set of hospital and county controls. By contrast, the *Stand-alone* and *Add-on* columns are imprecise, consistent with their weak first stages and the idea that CPOM shifts entry but not subsequent tuck-ins.

A note on magnitudes is useful. The endogenous regressors are binary indicators, so two-stage procedures scale reduced-form effects by the first-stage slope,

$$\widehat{\beta}_{\text{2SLS}} = \frac{\widehat{\beta}_{\text{RF}}}{\widehat{\pi}}.$$

When $\widehat{\pi}$ is modest, this mapping converts small reduced-form shifts in acquisition probabilities into the effect of a full 0-to-1 change in treatment. The estimates are therefore local to hospitals whose platform status is moved by CPOM.

These results connect directly to the proposed mechanisms. The first stage shows that greater CPOM leniency predicts private equity entry overall and especially platform acquisitions, while the instrument is weak for stand-alone and add-on hospitals. In the second stage, profitability rises for platforms and in the pooled PE sample, with positive effects on ROA and OI/TA, consistent with profitability improvements concentrated at the platform stage. The platform and pooled PE estimates also point to lower leverage, consistent with balance-sheet rebalancing through recapitalization and equity infusion.

6.3 Dynamic Effects Model

I estimate an event study centered on the acquisition year with three pre years and six post years, using the matched sample and control set applied throughout. Exact event time indicators are constructed, with the year before acquisition omitted as the reference group. Across outcomes, the preperiod coefficients are small and show no systematic trend, which supports the parallel trend assumption. The main event-study results are shown in Figure 2.

Financing shifts appear first and set the stage for subsequent outcomes. At platforms, debt financing costs fall sharply at close, with spreads declining by over 200 bps relative to controls and remaining in the range of negative two to four percentage points for several years. The coefficients are significantly negative in multiple post years and consistently below zero across the horizon, indicating a repricing advantage secured at the outset. Add-ons, by contrast, show flat and noisy spreads with no sign of repricing, underscoring that the financing relief is concentrated at the platform.

Profitability improves only after this initial financing repricing. At platforms, return on assets shows little change in the first year but rises by three to four percentage points in the second year, reaching seven to ten points above controls by years three through five and remaining elevated through year six. These lagged gains reflect the time required for centralized investments to mature. Add-ons do not display systematic or sustained profitability improvements, highlighting that profitability gains break down when the roll-up extends beyond the platform.

Other outcomes follow the same staged pattern and are consistent with the within-rule operating channel. Platforms expand into higher-acuity services, with the case-mix index rising by the second post year and stabilizing at a higher level, while add-ons show no comparable shift. Employment adjustments also diverge: platforms cut administrative staff early while modestly

increasing clinical headcount, reflecting targeted efficiency and capacity building. Add-ons, by contrast, rely on persistent and sizable reductions in core clinical staff, often exceeding 20 percent, without offsetting gains. These contrasts underscore that platforms activate within-rule levers to enhance efficiency, whereas add-ons lean more heavily on cost cutting that weakens their ability to replicate site-level improvements.

The event-time profiles reveal a staged, creditor-facing strategy at platforms. Financing relief arrives immediately at close, with debt costs falling relative to controls. This repricing sets the foundation for subsequent expansion: platforms shift into higher-acuity services, streamline administrative staff, expand clinical capacity, and ultimately achieve sustained profitability gains. Add-ons, by contrast, receive no new underwriting, show no repricing, and lean heavily on cost cutting, especially in core clinical staff, without offsetting improvements in margins or service mix. The sequence demonstrates that value creation is front-loaded at platform formation, while the roll-up breaks when extended through add-on acquisitions.[20]

6.4 Robustness Checks

I conduct two robustness exercises designed to ensure that the dynamic effects documented above are not artifacts of how the sample is constructed or how acquisitions are classified. The first concern is that baseline estimates might be influenced by uneven observation windows across hospitals: if treated hospitals drop out before or after acquisition, the estimated event-time profiles could partially reflect sample attrition rather than true post-acquisition dynamics. To address this, I re-estimate the event studies on a strictly balanced panel that requires hospitals to be observed in every year from three years before to six years after acquisition. The second concern is potential misclassification bias created by the finite observation window: some acquisitions that appear as stand-alone during the sample period may in fact be early platforms whose add-ons occur just beyond the horizon. To bound this problem, I reclassify all stand-alone acquisitions as platforms and restrict the sample to platform and add-on hospitals. Together, these checks probe whether the baseline results hinge on data structure or definitional choices, rather than reflecting genuine treatment effects.

First, I re-estimate the event-study models on a strictly balanced panel that requires hospitals to be observed in every event year from three years before to six years after acquisition. The resulting profiles, reported in Appendix Figure A5, remain consistent with the baseline estimates. Platforms continue to show early debt repricing in spreads, higher capital expenditures, and profitability improvements, while add-ons primarily exhibit persistent reductions in core clinical staff absent profitability gains. The overall shape and direction of effects are

[20]Results for the pooled PE sample and stand-alone hospitals are reported in Appendix Figure A4.

unchanged, reinforcing the interpretation of the baseline dynamics.

Second, I reclassify all stand-alone acquisitions as platforms and restrict the sample to platform and add-on hospitals. The corresponding event-time profiles, shown in Appendix Figure A6, likewise align with the baseline results. Platforms still display repricing of debt costs and staged investment with modest administrative staffing reductions, while add-ons continue to exhibit disproportionate and persistent declines in core clinical headcount with muted profitability changes. This exercise rules out the possibility that the platform–add-on contrast is an artifact of misclassifying censored early platforms as stand-alone.

6.5 Potential Channels

Two complementary channels help explain the observed post-acquisition patterns in hospital operations and cost structure. The first is the financing channel, which reflects how sponsors restructure borrowing costs across the holding company and subsidiary hospitals. The second is the within-rule operations channel, which captures how hospitals adjust billing composition within established payment frameworks. Both are consistent with the institutional features of the hospital industry and the reporting standards governing Medicare cost-reporting rules.

For hospitals in this study, Medicare and Medicaid patients account for more than half of all discharges on average. Because these public programs reimburse hospitals under fixed prospective payment schedules such as the Inpatient and Outpatient Prospective Payment Systems, hospitals cannot negotiate prices directly. This institutional environment differs from the commercial insurance markets analyzed by Liu (2022), where private equity ownership increases hospitals' bargaining leverage with private payers and raises negotiated prices. It also contrasts with physician and specialty practice settings studied by Asil et al. (2024), where private equity consolidators negotiate higher commercial reimbursement rates. In the hospital context, profitability improvements must instead arise from within-rule adjustments such as more complete coding, service reclassification, and fixed-cost absorption rather than from higher negotiated prices.

Financing Channel

The financing channel operates primarily through debt repricing at the time of acquisition. When a platform is established, the sponsor typically raises a new credit facility or refinances existing obligations at the system level, which lowers the effective borrowing cost faced by the hospitals under the platform umbrella. This repricing appears as a decline in the interest spread to the 3-month LIBOR rate, which drops immediately at close and remains lower for several years. The mechanism reflects both the fresh underwriting of platform deals, where lenders

reassess creditworthiness and price debt against the sponsor's backing, and the larger collateral base provided by the initial platform. Add-on acquisitions, in contrast, are folded into the pre-existing facility without new negotiation of terms and therefore do not inherit comparable relief on interest costs. The evidence indicates that financing advantages are concentrated at the platform stage: sponsors secure cheaper debt when the facility is first arranged, but subsequent hospitals added to the roll-up structure do not trigger further repricing. This sequence shows that roll-ups front-load their financing benefits at entry, creating an early cost advantage that supports later operational adjustments.

Within-Rule Operations Channel

A second mechanism involves how platform hospitals generate higher measured efficiency and profitability within the fixed reimbursement structure of Medicare and Medicaid. Payment formulas under the Inpatient Prospective Payment System (IPPS) and related programs assign fixed rates to diagnosis-related groups (DRGs) and do not permit discretionary price increases. Private equity sponsors therefore improve financial performance by operating within these rules, enhancing clinical documentation, refining coding accuracy, and standardizing care across high-acuity service lines that carry higher reimbursement weights. Investments in clinical documentation improvement (CDI) programs, electronic health record integration, and centralized revenue-cycle management enable more complete capture of reimbursable diagnoses without changing patient severity or negotiated prices. At the same time, standardized protocols and centralized purchasing allow platforms to spread fixed costs across a larger throughput base, lowering average cost per case while maintaining compliance with CMS payment regulations. This mechanism aligns with the observed combination of higher case-mix index, greater throughput, and stable prices: profitability improves not because of higher reimbursement rates but because hospitals operate more efficiently within the existing payment formulas.

7 Conclusion

This paper reframes private equity ownership in hospitals as a sequence rather than a homogeneous treatment. By separating platform acquisitions from their subsequent add-ons and from stand-alone deals, and by aligning the empirical design with debt-origination logic and staged integration, the analysis shows where value is created, when it arrives, through which channels it materializes, and why it does not scale uniformly across a roll-up. The central message is straightforward: in hospital roll-ups, value is concentrated at platform formation, while add-ons largely extend scope and centralize costs without reproducing platform-level profitability at each site.

Three sets of results anchor this conclusion. First, selection into the platform role is economically meaningful. Platforms are drawn from relatively low-leverage, higher-margin hospitals that maximize pledgeable collateral and observable performance. This selection is stronger where corporate practice of medicine rules are more lenient, which facilitates platform entry and helps explain why the first deal in a chain is the locus of financing advantages. The evidence is consistent with a creditor-facing strategy at inception in which sponsors build credibility with a visibly healthy flagship and secure a scalable facility on attractive terms.

Second, financing terms move earliest and most at platforms. Platforms experience immediate reductions in borrowing spreads at close, consistent with repricing of debt at origination. These gains support higher capital expenditures. These facts are difficult to reconcile with a narrative of uniform improvement across all sites, but they fit debt-at-origination pricing and staged recapitalization.

Third, profitability improves at platforms, in step with the maturation of centralized investments. These improvements reflect the within-rule operating channel: operating margin, operating income over assets, and return on assets rise as platforms expand throughput, intensify activity in high-acuity lines, and reduce cost-to-charge ratios where fixed-cost spreading and standardization are strongest. Staffing adjustments at platforms are targeted, with reductions in administrative headcount and increases in core clinical staffing, consistent with capacity building rather than across-the-board cuts.

Add-ons follow a different path. They are folded into the platform's facility without fresh re-underwriting, do not trigger incremental repricing of debt, and rely more heavily on quantity-based labor reductions and back-office consolidation. On average, they do not generate additional margin expansion on their own balance sheets. Their contribution is to extend the footprint and exploit shared systems rather than to replicate platform gains at each site, consistent with weaker activation of both the financing and within-rule operating channels. Stand-alone acquisitions form a distinct category: outside the roll-up architecture and absent shared financing or centralized integration, their post-deal trajectories display limited systematic profitability improvement.

Methodologically, the paper ties identification to how roll-ups are financed and integrated. I use a matched design with hospital and match-group fixed effects and two-way clustered inference. The windowed difference-in-differences separates short-run from medium-run responses by deal role, and event studies around close trace timing for financing, investment, profitability, and employment. To address selection into platform formation, I use a corporate practice of medicine regulation index as an instrument; it shifts platform entry where theory predicts a first stage and delivers local two-stage estimates for compliers.

Substantively, I link hospital financials to service-line and throughput measures, including

case mix, discharges, intensive care and laboratory intensity, and cost-to-charge ratios, and I pair these with patient-experience and clinical outcomes in the windowed design. This combination documents the financing channel, identifies the within-rule operating channel, and shows the limits to scaling platform gains across add-ons.

The implications extend to practice and policy. For investors and lenders, the results explain why underwriting and monitoring focus on platform formation, where collateral, pricing, and integration capacity are set. For regulators and payers, treating private equity ownership as a single category risks missing the locus of action. Disclosure should distinguish platforms from add-ons, require reporting of facility size, pricing, and covenants at origination, and track financing and balance-sheet changes after close. Antitrust and certificate-of-need reviews should also account for sequencing.

Limitations and external validity point to future research. The estimates apply most directly to regulated, labor-intensive services with large fixed costs and codifiable workflows. Whether the platform-centric scaling limit extends to other provider settings or non-healthcare roll-ups is an open question. Future work can test this generalization and examine the durability of platform gains through refinancing cycles and credit shocks, including how covenants, maturities, and rate resets shape investment and margins.

In sum, the paper challenges the idea of a uniform, repeatable private equity playbook in healthcare delivery. Value creation in hospital roll-ups depends on sequencing, collateral, and financial design at the outset. Platforms capture financing and within-rule operating gains, while add-ons extend scope and centralization but deliver thinner, largely labor-driven savings with limited profitability. Recognizing this asymmetry clarifies why platform gains are difficult to replicate and why evaluation by deal role is essential. Put differently, the evidence shows where the roll-up works and where it breaks.

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Table 1: Pre-Acquisition Hospital Statistics: PE-Acquired vs Never-Acquired

This table reports hospital-level means prior to the first private equity acquisition (PE-Acquired) and for hospitals that are never acquired (Never-Acquired), before any matching of control groups. For PE-Acquirer, each hospital contributes its average over years $t = -3$ to $t = -1$ relative to its first PE deal; Never-Acquired hospitals contribute their mean over all observed years. Column (1)–(2) reports differences tested with unequal-variance t tests (Welch). Significance levels are denoted by *, **, and *** for the 10%, 5%, and 1% levels.

Variable	(1) **PE-Acquired**	(2) **Never-Acquired**	**(1)–(2)**
Financing and Balance Sheet			
Rate on IB Debt	0.066	0.059	0.006*
Spread (IB–3m)	0.040	0.028	0.012***
Leverage Ratio	0.554	0.538	0.016
Capex/Assets	0.065	0.071	-0.006***
IB Debt/Assets	0.173	0.175	-0.002
Non-IB Liabilities/Assets	0.371	0.329	0.042**
IB Debt Share	0.289	0.316	-0.027*
Profitability			
Operating Margin	0.013	-0.220	0.232***
Operating Income/Assets (OI/TA)	0.053	-0.109	0.162***
ROA	0.072	0.015	0.057***
Operations and Revenues			
Log(Cost per Adj. Discharge)	9.142	9.026	0.116***
Log(Total Cost)	17.580	17.153	0.426***
Log(Adjusted Discharges)	8.363	8.079	0.284***
Case-Mix and CMI Adjusted			
CMI	1.465	1.345	0.120***
Log(Medicare Discharges, CMI-adj)	7.772	6.808	0.964***
Log(Medicare Inpatient Costs, CMI-adj)	16.482	15.506	0.976***
Log(Non-Medicare Price, CMI-adj)	8.592	8.471	0.121***
Employment and Wages			
Log(Total Employment)	5.782	5.697	0.085*
Log(Core Employment)	3.629	3.134	0.495***
Log(Admin Employment)	3.606	3.450	0.155**
Log(Total Salary)	16.803	16.506	0.297***
Log(Core Wage)	8.713	7.961	0.753***
Log(Admin Wage)	11.054	10.853	0.201***
Hospital Characteristics and Demographics			
Total Beds	133.156	113.382	19.774***
% Medicare	0.472	0.449	0.023***
% Medicaid	0.100	0.109	-0.009*
% Outpatient	0.350	0.431	-0.081***
% Asian	0.034	0.030	0.004**
% Black	0.147	0.121	0.026***
1BR Rent (County,$)	630.336	603.180	27.156***
Hospital Count	848	5642	
Deal Count	269		

Table 2: Pre-Acquisition Hospital Statistics by PE acquisition type

Hospitals are grouped by their acquisition type under private equity ownership: Stand-alone, Platform, and Add-on. For each hospital, variables are averaged over the three years prior to its first PE deal (years $t = -3$ to $t = -1$). Columns (1)–(2), (2)–(3), and (1)–(3) report differences tested with unequal-variance t tests (Welch). Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Variable	(1) Stand-alone	(2) Platform	(3) Add-on	(1)–(2)	(2)–(3)	(1)–(3)
Financing and Balance Sheet						
Rate on IB Debt	0.073	0.084	0.063	-0.011	0.021**	0.011
Spread (IB–3m)	0.064	0.063	0.032	0.001	0.031***	0.032*
Leverage Ratio	0.790	0.181	0.576	0.609***	-0.395***	0.214
Capex/Assets	0.089	0.064	0.061	0.025	0.002	0.027
IB Debt/Assets	0.220	0.148	0.200	0.072	-0.052**	0.020
Non-IB Liabilities/Assets	0.564	0.361	0.390	0.203	-0.029	0.174
IB Debt Share	0.308	0.268	0.323	0.040	-0.055	-0.015
Profitability						
Operating Margin	-0.003	0.045	-0.030	-0.047	0.075***	0.027
OI/TA	0.159	0.107	-0.037	0.052	0.144***	0.196***
ROA	0.223	0.098	0.009	0.125**	0.089***	0.214***
Operations and Revenues						
Log(Avg.Cost/Adj.Discharge)	9.451	9.141	9.137	0.310**	0.004	0.314**
Log(Total Cost)	16.896	17.752	17.494	-0.855***	0.258***	-0.597***
Log(Adjusted Discharges)	7.431	8.507	8.340	-1.076***	0.167	-0.909***
Case-Mix and CMI Adjusted						
CMI	1.722	1.467	1.442	0.255	0.025	0.280*
Log(Medicare Discharges, CMI-adj)	6.976	7.771	7.834	-0.795	-0.063	-0.858*
Log(Medicare Inpatient Costs, CMI-adj)	16.077	16.475	16.524	-0.398	-0.049	-0.447
Log(Non-Medicare Price, CMI-adj)	8.604	8.687	8.460	-0.083	0.228***	0.144
Employment and Wages						
Log(Core Employment)	2.734	3.550	3.833	-0.816*	-0.284**	-1.100**
Log(Admin Employment)	3.817	3.451	3.832	0.366	-0.380***	-0.015
Log(Core Wage)	8.479	8.560	9.000	-0.082	-0.440	-0.522
Log(Admin Wage)	11.009	11.122	10.948	-0.113	0.174***	0.062
Hospital Characteristics and Demographics						
Total Beds	72.401	143.634	130.436	-71.233***	13.198	-58.035***
%Medicare	0.520	0.478	0.454	0.042	0.024	0.065
%Medicaid	0.038	0.098	0.116	-0.060***	-0.017*	-0.077***
%Outpatient	0.218	0.351	0.371	-0.134***	-0.020	-0.153***
%Asian	0.047	0.038	0.027	0.009	0.012***	0.021***
%Black	0.126	0.157	0.136	-0.030*	0.021*	-0.009
1BR Rent (County,$)	744.217	631.453	608.075	112.763***	23.379	136.142***
Hospital Count	63	469	316			
Deal Count	27	65	199			

Table 3: Summary Statistics For the Matched Sample

This table presents the summary statistics for the key variables utilized in this study. The sample includes observations from both target and control hospitals during the three years preceding and following their acquisition. The matched sample is constructed by pairing each PE-owned hospital with up to three control hospitals using the optimal Mahalanobis method.

Variable	Obs	Mean	P25	P50	P75	SD
Financing and Balance Sheet						
Rate on IB Debt	1,803	0.063	0.035	0.053	0.077	0.042
Spread (IB–3m)	1,803	0.043	0.012	0.037	0.061	0.045
Leverage Ratio	7,278	0.428	0.152	0.485	0.786	0.601
Capex/Assets	6,385	0.070	0.030	0.052	0.089	0.057
IB Debt/Assets	6,267	0.160	0.000	0.005	0.265	0.228
Non-IB Liabilities/Assets	6,243	0.349	0.091	0.245	0.498	0.346
IB Debt Share	5,435	0.291	0.000	0.118	0.578	0.322
Profitability						
Operating Margin	10,332	0.021	-0.049	0.031	0.127	0.213
OI/TA	8,696	0.051	-0.065	0.029	0.177	0.316
ROA	8,729	0.087	-0.023	0.056	0.181	0.267
Operations and Revenues						
Log(Avg.Cost/Adj.Discharge)	7,754	9.056	8.686	8.978	9.319	0.553
Log(Total Cost)	8,391	17.737	16.770	17.805	18.676	1.203
Log(Adjusted Discharges)	8,219	8.725	7.881	8.992	9.733	1.312
Case-Mix and CMI Adjusted						
CMI	7,035	1.513	1.278	1.485	1.671	0.358
Log(Medicare Discharges, CMI-adj)	7,033	7.887	7.225	8.076	8.780	1.265
Log(Medicare Inpatient Costs, CMI-adj)	7,032	16.620	15.883	16.810	17.560	1.262
Log(Non-Medicare Price, CMI-adj)	6,926	8.619	8.370	8.664	8.914	0.539
Employment and Wages						
Log(Core Employment)	8,569	3.927	2.965	4.213	5.166	1.629
Log(Admin Employment)	7,490	3.864	3.223	3.912	4.595	1.159
Log(Core Wage)	8,455	9.532	10.263	10.735	11.092	3.335
Log(Admin Wage)	7,313	10.992	10.764	10.989	11.195	0.602
Hospital Characteristics and Demographics						
Total Beds	8,880	146.618	49.000	108.000	202.000	143.520
%Medicare	10,382	0.453	0.304	0.419	0.588	0.211
%Medicaid	10,382	0.102	0.013	0.067	0.156	0.114
%Outpatient	8,116	0.383	0.260	0.394	0.523	0.207
%Asian	9,607	0.035	0.010	0.024	0.046	0.039
%Black	9,607	0.153	0.048	0.109	0.214	0.142
1BR Rent (County,$)	9,607	655.224	515.000	622.000	744.000	210.789

Table 4: Logit Regression Results: Probability of PE Acquisition

This table presents logistic regression estimates of the probability that a hospital is acquired by a private equity (PE) firm. The dependent variable is an indicator equal to one if the hospital is acquired in a given year. Columns distinguish between all PE acquisitions and subsets defined by acquisition type: standalone, platform, and add-on. Key independent variables include lagged leverage and lagged operating margin, along with hospital and county-level controls. Standard errors are clustered at the hospital level. The model is specified in Equation 1 and estimated on the full panel of hospital-year observations. Pseudo R^2 values are reported to assess model fit across acquisition types.

	Dependent Variable: Acquisition Indicator			
	All PE	Standalone	Platform	Add-on
Leverage ($L1.$)	-0.193^{***}	-0.004	-0.394^{***}	0.404^{***}
	(0.044)	(0.097)	(0.043)	(0.095)
Operating Margin ($L1.$)	0.503^{**}	0.046	0.732^{**}	0.494^{**}
	(0.205)	(0.604)	(0.325)	(0.208)
Observations	86,536	86,536	86,536	86,536
Pseudo R^2	0.028	0.164	0.050	0.025
Hospital Controls	Y	Y	Y	Y
County Controls	Y	Y	Y	Y

Table 5: Cost of Debt and Spread After PE Acquisition

This table reports difference-in-differences (DID) estimates of the effect of PE acquisition on measures of debt pricing. Each row shows the coefficient on a post-acquisition indicator interacted with the deal type, i.e., *Stand-alone* (a target acquired that is not part of a roll-up), *Platform* (a new platform acquisition), and *Add-on* (a target added to an existing platform). Columns report effects in the first four years after PE entry and in years five to eight. Outcomes are: Cost of Debt, defined as interest expense divided by interest-bearing liabilities; and Spread (vs 3-month LIBOR), defined as the difference between the effective borrowing rate and the 3-month LIBOR benchmark. The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, case mix index); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Cost of Debt		Spread	
Post-Deal Window	[0,4]	[5,8]	[0,4]	[5,8]
(1) Stand-alone	0.0134	−0.0387**	0.0049	−0.0651***
	(0.39)	(−1.99)	(0.15)	(−3.35)
(2) Platform	−0.0169**	−0.0023	−0.0165**	−0.0006
	(−2.02)	(−0.16)	(−2.13)	(−0.04)
(3) Add-on	0.0184**	0.0036	0.0234***	0.0092
	(2.45)	(0.34)	(2.78)	(0.69)
Observations	3,976	3,981	3,976	3,981
Adj. R^2	0.478	0.467	0.504	0.494
H_0^{A}: (1) = (2)	0.389	0.124	0.519	0.123
H_0^{B}: (2) = (3)	0.001	0.735	0.000	0.735
H_0^{C}: (1) = (3)	0.885	0.056	0.580	0.056
Hospital Controls	Y	Y	Y	Y
County Controls	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y

Table 6: Balance Sheet Structure, Investment, and Liquidity After PE Acquisition

This table reports DID estimates of the effect of private equity (PE) acquisition on balance sheet outcomes. Each row shows the coefficient on a post-acquisition indicator interacted with the deal type, i.e., *Stand-alone* (a target acquired that is not part of a roll-up), *Platform* (a new platform acquisition), and *Add-on* (a target added to an existing platform). Columns report effects in the first four years after PE entry and in years five to eight. Outcomes are: leverage (Liab/TA), capital expenditures to total assets (Capex/TA), and cash holdings to total assets (Cash/TA). The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, case mix index); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Leverage		Capex/TA		Cash/TA	
Post-Deal Window	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]
(1) Stand-alone	0.043	0.377*	0.036*	0.039	−0.000	0.034
	(0.31)	(1.71)	(1.72)	(1.45)	(−0.02)	(0.92)
(2) Platform	−0.157***	−0.275***	0.017***	0.034***	−0.002	0.003
	(−3.20)	(−4.50)	(3.76)	(6.22)	(−0.75)	(0.77)
(3) Add-on	0.136***	0.033	0.011	0.005	−0.011**	−0.015**
	(2.65)	(0.43)	(1.52)	(0.62)	(−2.32)	(−2.10)
Observations	10,415	10,938	10,415	10,938	10,415	10,938
Adj. R^2	0.628	0.640	0.061	0.103	0.554	0.555
H_0^A: (1) = (2)	0.156	0.004	0.369	0.000	0.483	0.102
H_0^B: (2) = (3)	0.000	0.000	0.616	0.000	0.000	0.000
H_0^C: (1) = (3)	0.528	0.146	0.292	0.198	0.528	0.146
Hospital Controls	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y

Table 7: Capital Structure and Liability Mix After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on hospital capital structure and liability mix. Each row shows the coefficient on a post-acquisition indicator interacted with the deal type, i.e., *Stand-alone* (a target acquired that is not part of a roll-up), *Platform* (a new platform acquisition), and *Add-on* (a target added to an existing platform). Columns report effects in the first four years after PE entry and in years five to eight. Outcomes are: interest-bearing debt to total assets (IB Debt/TA), non-interest-bearing liabilities to total assets (NIBL/TA), and the share of interest-bearing debt in total liabilities (IB Debt/TL). The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, case mix index); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	IB Debt/TA		NIBL/TA		IB Debt/TL	
Post-Deal Window	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]
(1) Stand-alone	−0.092	0.088	−0.025	0.140	−0.038	0.049
	(−1.23)	(0.55)	(−0.21)	(0.65)	(−0.29)	(0.24)
(2) Platform	0.001	0.079**	0.044	−0.124**	−0.003	0.133***
	(0.05)	(2.08)	(1.23)	(−2.37)	(−0.11)	(3.04)
(3) Add-on	−0.021	−0.016	0.114***	0.045	−0.037	−0.032
	(−0.72)	(−0.40)	(2.82)	(0.83)	(−0.97)	(−0.59)
H_0^A: (1) = (2)	0.229	0.957	0.572	0.236	0.797	0.687
H_0^B: (2) = (3)	0.553	0.070	0.171	0.016	0.485	0.014
H_0^C: (1) = (3)	0.361	0.522	0.257	0.666	0.998	0.547
Observations	9,902	9,982	9,902	9,982	9,902	9,982
Adj. R^2	0.453	0.423	0.528	0.491	0.453	0.429
Hospital Controls	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y

Table 8: Profitability After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on hospital profitability outcomes. Each row shows the coefficient on a post-acquisition indicator interacted with the deal type, i.e., *Stand-alone* (a target acquired that is not part of a roll-up), *Platform* (a new platform acquisition), and *Add-on* (a target added to an existing platform). Columns report effects in the first four years after PE entry and in years five to eight. Outcomes are: operating margin, operating income over total assets (OI/TA), and return on assets (ROA). The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, case mix index); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Operating Margin		OI/TA		ROA	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.030	-0.076	0.050	-0.026	0.100	-0.026
	(-0.40)	(-0.97)	(0.46)	(-0.26)	(0.94)	(-0.30)
(2) Platform	0.002	0.059***	0.035*	0.133***	0.062***	0.153***
	(0.13)	(3.77)	(1.71)	(5.27)	(3.06)	(6.60)
(3) Add-on	-0.005	0.013	-0.054**	0.002	-0.026	0.013
	(-0.35)	(0.64)	(-2.24)	(0.08)	(-1.19)	(0.48)
H_0^A: (1) = (2)	0.681	0.094	0.889	0.124	0.724	0.048
H_0^B: (2) = (3)	0.682	0.030	0.002	0.000	0.002	0.000
H_0^C: (1) = (3)	0.736	0.273	0.342	0.788	0.241	0.669
Adj. R^2	0.421	0.419	0.426	0.452	0.452	0.477
Observations	11,374	11,849	11,374	11,849	11,374	11,849
Hospital Controls	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y

Table 9: Revenues and Charges After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on hospital revenues and charges. *Panel A* reports results for revenue measures: Log(MDCR IP Rev) = log Medicare net inpatient revenue; Log(MDCR OP Rev) = log Medicare net outpatient revenue; Log(Net Pat Rev) = log total net patient revenues. *Panel B* reports results for charge measures: Log(MDCR IP Chg) = log Medicare inpatient charges; Log(MDCR OP Chg) = log Medicare outpatient charges; Log(Total Chg) = log total hospital charges. Columns report effects in the first four years after PE entry and in years five to eight. The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. Specifications include hospital, event-time, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, profitability); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Panel A: Revenue Outcomes						
	Log(MDCR IP Rev)		Log(MDCR OP Rev)		Log(Net Pat Rev)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.228	0.059	-0.393	-0.166	-0.226	-0.210
	(-0.84)	(0.40)	(-1.08)	(-0.77)	(-1.28)	(-1.13)
(2) Platform	0.063**	0.207***	0.061	0.059	0.039	0.088**
	(2.23)	(5.08)	(1.59)	(1.03)	(1.46)	(2.18)
(3) Add-on	-0.152***	-0.105**	-0.195***	-0.121	-0.169***	-0.151***
	(-4.74)	(-1.99)	(-4.20)	(-1.62)	(-5.44)	(-2.96)
H_0^A (1) = (2)	0.278	0.332	0.203	0.302	0.130	0.116
H_0^B (2) = (3)	0.000	0.000	0.000	0.032	0.000	0.000
H_0^C (1) = (3)	0.786	0.295	0.592	0.840	0.756	0.759
Adj. R^2	0.956	0.951	0.911	0.907	0.951	0.948
Observations	11,357	11,831	11,357	11,831	11,357	11,831
Panel B: Charge Outcomes						
	Log(MDCR IP Chg)		Log(MDCR OP Chg)		Log(Total Chg)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.364	-0.011	-0.218	-0.122	-0.308**	-0.249
	(-1.42)	(-0.07)	(-0.88)	(-0.39)	(-2.14)	(-1.52)
(2) Platform	0.147***	0.335***	0.095***	0.162***	0.062**	0.229***
	(4.04)	(6.28)	(2.69)	(3.14)	(2.02)	(5.02)
(3) Add-on	-0.158***	-0.066	-0.143***	-0.045	-0.185***	-0.065
	(-3.75)	(-0.77)	(-3.48)	(-0.59)	(-5.09)	(-0.89)
H_0^A (1) = (2)	0.043	0.036	0.197	0.367	0.009	0.004
H_0^B (2) = (3)	0.000	0.000	0.000	0.009	0.000	0.000
H_0^C (1) = (3)	0.434	0.759	0.766	0.809	0.407	0.297
Adj. R^2	0.955	0.951	0.943	0.940	0.961	0.959
Observations	11,357	11,831	11,357	11,831	11,357	11,831
Hospital Controls	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y

Table 10: Case-Mix and Medicare Outcomes After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on case mix and Medicare outcomes. Each row shows the coefficient on a post-acquisition indicator interacted with the deal type, i.e., *Stand-alone* (a target acquired that is not part of a roll-up), *Platform* (a new platform acquisition), and *Add-on* (a target added to an existing platform). Columns report effects in the first four years after PE entry and in years five to eight. Outcomes are: log case-mix index (CMI), log Medicare discharges, log Medicare inpatient cost, and log non-Medicare price per discharge. The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, profitability); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

			CMI Adjusted					
	Log(CMI)		Log(Med. Disc.)		Log(Med. Inpat. Cost)		Log(Non-Med. Price)	
Post-Deal Window	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]
(1) Stand-alone	−0.040	−0.019	−0.214	0.015	−0.185	−0.001	0.132	−0.113
	(−0.94)	(−0.52)	(−0.79)	(0.10)	(−0.73)	(−0.01)	(0.67)	(−1.10)
(2) Platform	0.018**	0.034***	0.042	0.211***	0.074***	0.177***	−0.008	−0.057
	(2.25)	(4.61)	(1.46)	(4.68)	(2.81)	(4.42)	(−0.28)	(−1.38)
(3) Add-on	−0.025***	−0.040***	−0.155***	−0.107*	−0.172***	−0.175***	−0.028	−0.069
	(−2.71)	(−3.72)	(−3.40)	(−1.81)	(−4.64)	(−3.09)	(−0.60)	(−0.95)
H_0^A: (1) = (2)	0.1882	0.1518	0.3430	0.2004	0.3072	0.3773	0.4842	0.6012
H_0^B: (2) = (3)	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.6854	0.8747
H_0^C: (1) = (3)	0.7379	0.5717	0.8338	0.4372	0.9613	0.3971	0.4282	0.7073
Observations	8,420	8,904	8,420	8,904	8,420	8,904	8,420	8,904
Adj. R^2	0.789	0.831	0.960	0.957	0.965	0.963	0.693	0.676
Hospital Controls	Y	Y	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y	Y	Y

Table 11: Hospital Staffing and Wages After PE Acquisition

This table reports DID estimates of employment and wage outcomes following PE hospital acquisitions. Panel A shows effects on employment levels for core clinical and administrative staff, and Panel B on average hourly wages for those categories. Columns report effects in the first four years after PE entry and in years five to eight. The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. Regressions include hospital fixed effects, year fixed effects, and hospital and county controls. Standard errors are clustered at the hospital level. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Panel A: Employment				
	Log(Emp Core)		Log(Emp Admin)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.310*	0.080	-0.116	-0.085
	(-1.82)	(0.33)	(-0.66)	(-0.61)
(2) Platform	0.154***	0.127**	-0.259***	-0.157***
	(3.56)	(2.29)	(-5.82)	(-3.21)
(3) Add-on	-0.250***	-0.292***	-0.210***	-0.141**
	(-4.08)	(-3.17)	(-3.74)	(-2.05)
H_0^A: (1) = (2)	0.008	0.847	0.424	0.615
H_0^B: (2) = (3)	0.000	0.000	0.437	0.813
H_0^C: (1) = (3)	0.739	0.144	0.616	0.714
Adj. R^2	0.891	0.877	0.777	0.787
Observations	11,395	11,878	11,395	11,878
Panel B: Hourly Wage				
	Log(Wage Core)		Log(Wage Admin)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.048	-0.168**	-0.024	-0.017
	(-0.53)	(-2.04)	(-0.57)	(-0.21)
(2) Platform	-0.201***	-0.117***	0.159***	0.169***
	(-5.61)	(-3.05)	(9.35)	(7.79)
(3) Add-on	0.029	0.011	0.054	0.015
	(0.79)	(0.22)	(1.33)	(0.50)
H_0^A: (1) = (2)	0.093	0.513	0.000	0.022
H_0^B: (2) = (3)	0.000	0.016	0.012	0.000
H_0^C: (1) = (3)	0.408	0.045	0.168	0.705
Adj. R^2	0.540	0.536	0.476	0.575
Observations	11,395	11,878	11,395	11,878
Hospital Controls	Y	Y	Y	Y
County Controls	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y

Table 12: First-Stage Regression: CPOM Regulation Index and PE Acquisition Types

Each column reports the first-stage regression of the indicated PE acquisition indicator on the CPOM Regulation Index (higher = more lenient). All specifications include hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, CMI), county controls (log population, log fair market rent, Black share, Asian share), plus fixed effects for hospital and year. "KP F-stat" is the Kleibergen–Paap rk Wald F statistic (compare to Stock–Yogo critical values). "LM p-value" is from the Kleibergen–Paap rk LM test of underidentification. Standard errors are clustered by provider. t-statistics are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

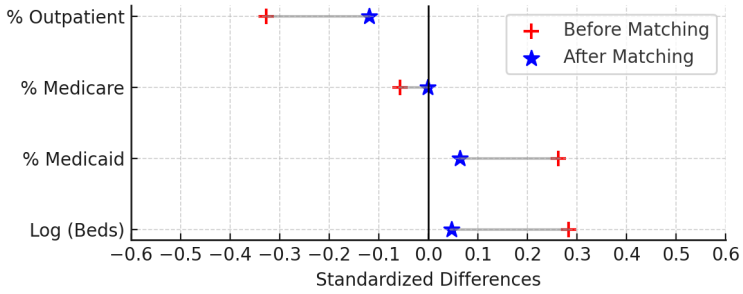
Dep. variable	(1) PE Target	(2) Stand-alone	(3) Platform	(4) Add-on
CPOM Index	0.0123**	0.0005	0.0093***	0.0025
	(3.10)	(0.35)	(2.96)	(1.15)
KP F-stat (Wald F)	9.60	0.12	8.78	1.33
LM p-value (under-ID)	0.002	0.725	0.004	0.249
Adj. R^2	0.818	0.417	0.874	0.771
Observations	15,519	15,519	15,519	15,519
Hospital Controls	Y	Y	Y	Y
County Controls	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y

Table 13: Second-Stage IV Estimates: Profitability and Leverage Outcomes

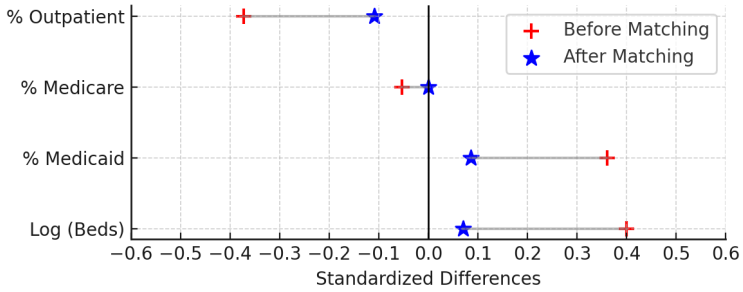
Second-stage IV estimates using the CPOM Regulation Index as an instrument; first-stage results are reported in Table 12. Each panel reports results from a separate regression using the unmatched sample of hospitals. Dependent variables are: *return on assets (ROA)*, *operating income over total assets (OI/TA)*, and *leverage ratio* (total liabilities / total assets). All models include hospital controls (log beds, Medicare share, Medicaid share, outpatient share, CMI), county controls (log population, log fair market rent, Black share, Asian share), hospital fixed effects, and year fixed effects. Standard errors are clustered at the provider level. t-statistics are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	ROA	*OI/TA*	*Leverage*
Panel A: PE Target			
PE	0.768**	0.652*	−1.006**
	(2.43)	(1.79)	(−2.16)
Hospital Controls	Y	Y	Y
County Controls	Y	Y	Y
Hospital FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	15,519	15,519	15,519
Panel B: Platform Target			
Platform	1.014**	0.862*	−1.329**
	(2.21)	(1.67)	(−2.02)
Hospital Controls	Y	Y	Y
County Controls	Y	Y	Y
Hospital FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	15,519	15,519	15,519

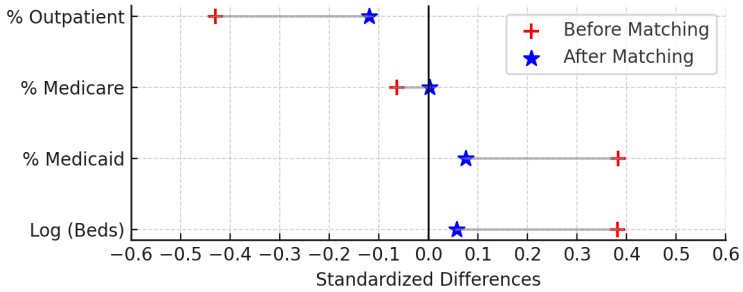
Figure 1. Balance Test after Mahalanobis Matching



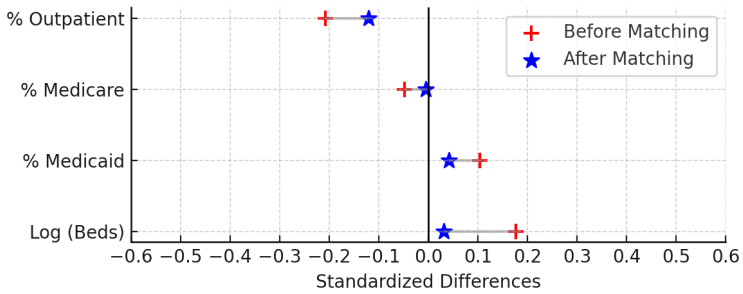
(a) *Overall*



(b) *Stand-alone*



(c) $Platform$



(d) *Add-on*

Figure 2. Event-Study Estimates

This figure plots event-study coefficients with two-way clustered standard errors (provider and match group) for five outcomes: return on assets (ROA), debt financing spread (IB - 3m), Medicare case-mix index (CMI), core employment, and administrative employment. All specifications include hospital controls (log beds, Medicare share, Medicaid share, outpatient share), county controls (log population, log FMR, Black share, Asian share), and fixed effects for provider, year-gap, and match group. The omitted event time is $F1$ (one year before).

(a) Platform

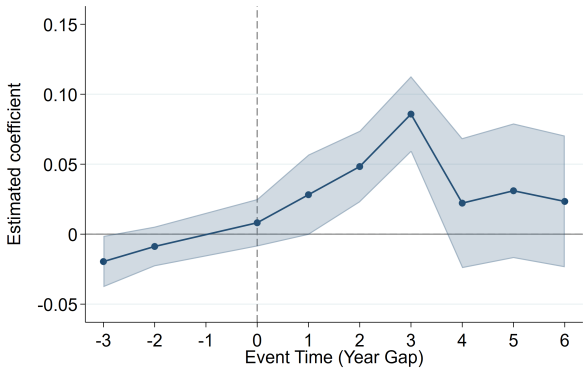
(b) Add-on

(c) Platform

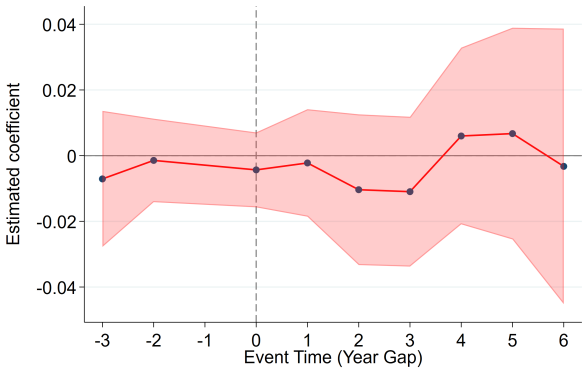
(d) Add-on

Figure 2. Event-Study Estimates (continued)

Outcome: Case-Mix Index (CMI)

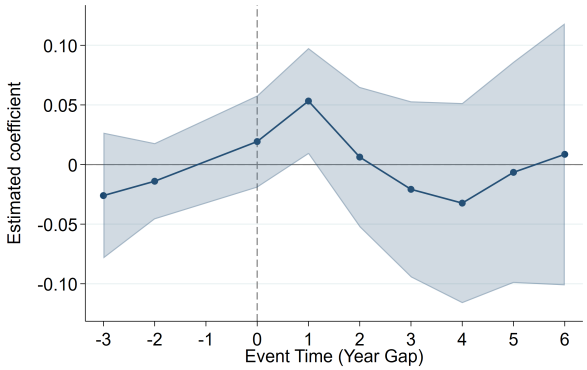


(e) Platform

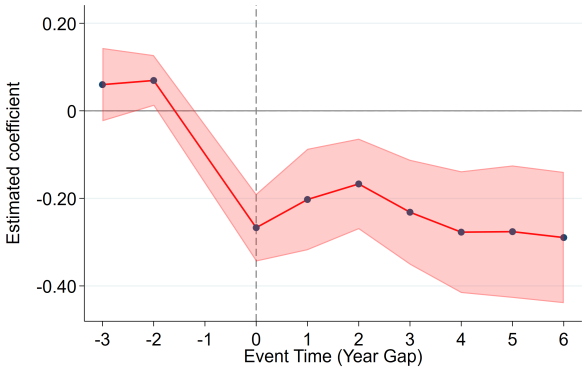


(f) Add-on

Outcome: Core Clinical Employment

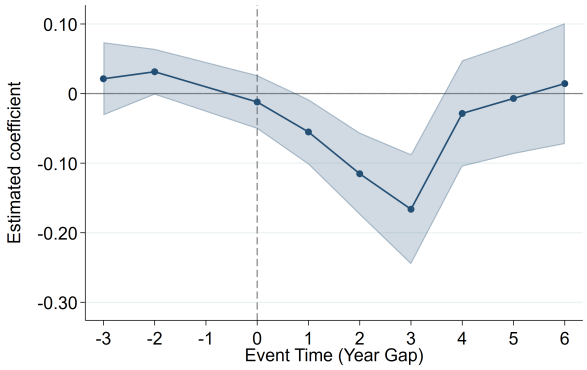


(g) Platform

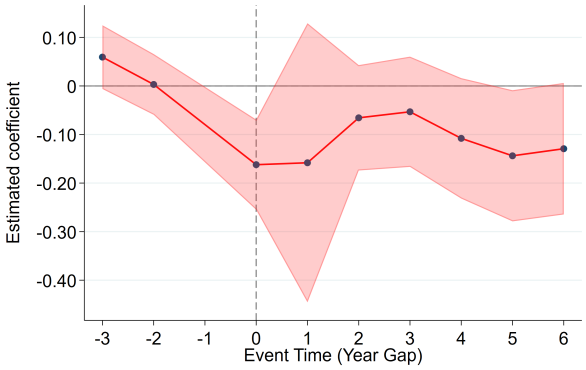


(h) Add-on

Outcome: Administrative Employment



(i) Platform



(j) Add-on

Appendix A: Tables and Figures

Table A1: Balance Sheet Levels After PE Acquisition

This table reports difference-in-differences (DID) estimates of the effect of PE acquisition on balance sheet levels. Each row shows the coefficient on a post-acquisition indicator interacted with the deal type, i.e., *Stand-alone* (a target acquired that is not part of a roll-up), *Platform* (a new platform acquisition), and *Add-on* (a target added to an existing platform). Columns report effects in the first four years after PE entry and in years five to eight. Outcomes are total liabilities, long-term liabilities, equity, and assets, all expressed in billions of dollars. The rows labeled "(1) = (2)" and "(2) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, case mix index); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Liabilities ($ bn)		LT Liabilities ($ bn)		Equity ($ bn)		Assets ($ bn)	
Post-Deal Window	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]
(1) Stand-alone	−0.021	−0.001	−0.013	0.014	−0.044**	−0.107***	−0.039**	−0.056**
	(−1.61)	(−0.12)	(−1.30)	(1.13)	(−2.48)	(−3.09)	(−2.57)	(−2.72)
(2) Platform	−0.030***	−0.056***	−0.027***	−0.042***	0.016	0.066***	−0.028***	−0.023**
	(−5.44)	(−7.33)	(−5.79)	(−6.59)	(1.14)	(3.36)	(−4.32)	(−2.39)
(3) Add-on	−0.019***	−0.036***	−0.018***	−0.031***	−0.072***	−0.082***	−0.052***	−0.064***
	(−4.10)	(−4.18)	(−4.59)	(−3.88)	(−5.97)	(−4.86)	(−6.97)	(−6.46)
Observations	11,128	11,596	11,128	11,596	11,128	11,596	11,128	11,596
Adj. R^2	0.767	0.748	0.735	0.711	0.759	0.758	0.856	0.843
H_0^A: (1) = (2)	0.509	0.000	0.207	0.000	0.002	0.000	0.473	0.128
H_0^B: (2) = (3)	0.073	0.038	0.080	0.184	0.000	0.000	0.001	0.000
H_0^C: (1) = (3)	0.904	0.006	0.675	0.001	0.136	0.499	0.454	0.737
Hospital Controls	Y	Y	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y	Y	Y

Table A2: Patient Volumes and Capacity After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on patient volumes and capacity. Each row shows the coefficient on a post-acquisition indicator interacted with the deal type, i.e., *Stand-alone* (a target acquired that is not part of a roll-up), *Platform* (a new platform acquisition), and *Add-on* (a target added to an existing platform). Columns report effects in the first four years after PE entry and in years five to eight. Outcomes are measured in natural logs (except occupancy rate), so coefficients are semi-elasticities and can be interpreted as approximate percent changes ($100 \times \beta$). The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. These tests assess whether the effects differ significantly across acquisition types. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, profitability); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Log(Total Discharges)		Log(Medicare Discharges)		Log(Medicaid Discharges)		Log(Discharges/Bed)		Occupancy Rate	
Post-Deal Window	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]
Stand-alone	−0.439	−0.074	−0.388	−0.088	−0.239	−0.841	−0.275	−0.101	−0.097**	−0.058**
	(−1.470)	(−0.580)	(−1.310)	(−0.580)	(−0.640)	(−1.190)	(−1.440)	(−0.850)	(−2.360)	(−2.840)
Platform	0.032	0.149***	0.045	0.182***	0.049	0.119	0.075**	0.123***	0.026**	0.062***
	(1.120)	(3.560)	(1.340)	(3.960)	(0.870)	(1.520)	(2.460)	(3.240)	(2.550)	(4.190)
Add-on	−0.200***	−0.111**	−0.178***	−0.092*	−0.240***	−0.038	−0.111***	−0.054	−0.038***	−0.023
	(−5.280)	(−2.140)	(−4.630)	(−1.800)	(−4.610)	(−0.470)	(−3.560)	(−1.280)	(−3.910)	(−1.280)
H_0^A: (1) = (2)	0.111	0.087	0.138	0.085	0.435	0.178	0.066	0.068	0.003	0.000
H_0^B: (2) = (3)	0.000	0.000	0.000	0.000	0.000	0.118	0.000	0.000	0.000	0.000
H_0^C: (1) = (3)	0.437	0.789	0.490	0.983	0.998	0.258	0.404	0.702	0.167	0.144
Observations	11,097	11,544	11,097	11,544	11,097	11,544	11,097	11,544	11,097	11,544
Adj. R^2	0.921	0.920	0.942	0.937	0.913	0.901	0.688	0.680	0.820	0.805
Hospital Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table A3: Costs and Adjusted Volume After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on hospital costs and volumes. Each row shows the coefficient on a post-acquisition indicator interacted with the deal type, i.e., *Stand-alone* (a target acquired that is not part of a roll-up), *Platform* (a new platform acquisition), and *Add-on* (a target added to an existing platform). Columns report effects in the first four years after PE entry and in years five to eight. Outcomes are: log total cost per *adjusted* discharge, log total cost, and log adjusted discharges. The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, profitability, case mix index); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Log(Cost / Adj Disch)		Log(Total Cost)		Log(Adj. Discharges)	
Post-Deal Window	[0,4]	[5,8]	[0,4]	[5,8]	[0,4]	[5,8]
(1) Stand-alone	0.039	−0.072	−0.276	−0.074	−0.315	−0.002
	(0.32)	(−1.10)	(−1.48)	(−0.48)	(−1.10)	(−0.01)
(2) Platform	0.018	−0.044*	0.052*	0.119***	0.033	0.163***
	(0.99)	(−1.82)	(1.79)	(3.13)	(1.15)	(3.85)
(3) Add-on	−0.025	−0.027	−0.234***	−0.159***	−0.209***	−0.132**
	(−0.75)	(−0.77)	(−7.99)	(−2.95)	(−5.44)	(−2.44)
H_0^A: (1) = (2)	0.866	0.663	0.076	0.219	0.220	0.192
H_0^B: (2) = (3)	0.206	0.622	0.000	0.000	0.000	0.000
H_0^C: (1) = (3)	0.620	0.522	0.828	0.604	0.720	0.326
Observations	11,456	11,940	11,456	11,940	11,456	11,940
Adj. R^2	0.848	0.858	0.943	0.943	0.911	0.912
Hospital Controls	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y

Table A4: Cost-to-Charge Ratios After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on cost-to-charge ratios (CCR). Panel A shows effects on overall, ICU, laboratory, and emergency CCR, and Panel B on adult/pediatric, medical supplies, drugs, and operating room CCR. Columns report effects in the first four years after PE entry and in years five to eight. The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing the effects between (1) Stand-alone×Post, (2) Platform×Post, and (3) Add-on×Post. The specification includes hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital-level controls (log beds, Medicare share, Medicaid share, outpatient share, profitability, case mix index); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Panel A								
	Log(Overall CCR)		Log(ICU CCR)		Log(Lab CCR)		Log(Emergency CCR)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	0.013	0.211***	0.041	0.347***	0.181**	0.052	0.352***	0.386***
	(0.070)	(4.670)	(0.160)	(8.440)	(2.220)	(1.070)	(3.160)	(4.680)
(2) Platform	-0.077***	-0.173***	-0.064**	-0.213***	-0.116***	-0.165***	-0.148***	-0.274***
	(-4.210)	(-5.750)	(-2.210)	(-4.990)	(-3.140)	(-3.010)	(-5.070)	(-5.860)
(3) Add-on	-0.045*	-0.111***	-0.008	-0.016	-0.022	-0.055	-0.073*	-0.172**
	(-1.800)	(-2.720)	(-0.210)	(-0.270)	(-0.670)	(-0.970)	(-1.900)	(-2.130)
H_0^A: (1) = (2)	0.652	0.000	0.681	0.000	0.000	0.001	0.000	0.000
H_0^B: (2) = (3)	0.245	0.184	0.166	0.005	0.030	0.109	0.088	0.246
H_0^C: (1) = (3)	0.771	0.000	0.850	0.000	0.010	0.079	0.000	0.000
Adj. R^2	0.903	0.919	0.850	0.848	0.904	0.908	0.871	0.885
Observations	6,246	6,768	6,246	6,768	6,246	6,768	6,246	6,768
Panel B								
	Log(Adult/Peds CCR)		Log(Medsupps CCR)		Log(Drugs CCR)		Log(OR CCR)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	0.129***	0.051	0.528***	0.762***	0.160**	0.212	0.065	0.474**
	(2.660)	(1.340)	(2.750)	(3.620)	(2.250)	(0.750)	(0.240)	(2.310)
(2) Platform	-0.077***	-0.127***	0.045	-0.300***	-0.032	-0.148***	-0.051*	-0.066
	(-2.640)	(-3.420)	(0.980)	(-3.880)	(-1.200)	(-3.570)	(-1.670)	(-1.560)
(3) Add-on	-0.018	-0.002	0.014	-0.098	0.000	-0.051	-0.026	-0.164**
	(-0.520)	(-0.040)	(0.220)	(-1.000)	(0.010)	(-0.700)	(-0.600)	(-2.550)
H_0^A: (1) = (2)	0.227	0.033	0.046	0.000	0.276	0.001	0.441	0.012
H_0^B: (2) = (3)	0.013	0.066	0.088	0.004	0.079	0.121	0.031	0.000
H_0^C: (1) = (3)	0.555	0.085	0.021	0.002	0.098	0.047	0.367	0.001
Adj. R^2	0.870	0.871	0.615	0.684	0.855	0.859	0.837	0.860
Observations	6,246	6,768	6,246	6,768	6,246	6,768	6,246	6,768
Hospital Controls	Y	Y	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y	Y	Y

Table A5: Intensive Care Unit (ICU) Outcomes After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on ICU outcomes. Panel A shows effects on ICU activity and billing (inpatient charges, gross inpatient revenue, inpatient days), and Panel B on ICU costs and efficiency (total costs, inpatient costs, cost-to-charge ratio). Columns report effects in the short run (years 0–4) and long run (years 5–8). The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing acquisition types. All specifications include hospital fixed effects, division×year fixed effects, and match-ID fixed effects; hospital controls (log beds, Medicare share, Medicaid share, outpatient share, profitability); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are based on two-way clustered standard errors (hospital and match-ID). Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Panel A: ICU Activity & Billing						
	Log(ICU Inpatient Charges)		Log(ICU Gross Rev)		Log(ICU Inpatient Days)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.312*	-0.314	-0.242*	-0.060	-0.592	-0.096
	(-1.73)	(-0.56)	(-1.77)	(-0.15)	(-1.36)	(-0.20)
(2) Platform	0.112**	0.322***	0.237***	0.543***	-0.005	0.157**
	(2.57)	(4.47)	(3.95)	(6.83)	(-0.12)	(2.36)
(3) Add-on	-0.140**	-0.175	-0.137**	-0.200*	-0.074	-0.210**
	(-2.31)	(-1.45)	(-2.27)	(-1.68)	(-1.28)	(-2.21)
H_0^A: (1) = (2)	0.017	0.260	0.001	0.137	0.171	0.607
H_0^B: (2) = (3)	0.000	0.000	0.000	0.000	0.243	0.000
H_0^C: (1) = (3)	0.348	0.809	0.460	0.736	0.242	0.819
Adj. R^2	0.932	0.923	0.926	0.925	0.877	0.873
Observations	6,246	6,768	6,246	6,768	6,246	6,768
Panel B: ICU Costs & Efficiency						
	Log(ICU Total Costs)		Log(ICU Inpatient Costs)		Log(ICU CCR)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.308	0.036	-0.310	0.023	0.041	0.347***
	(-0.90)	(0.06)	(-0.91)	(0.04)	(0.16)	(8.44)
(2) Platform	0.047	0.100**	0.047	0.099**	-0.064**	-0.213***
	(1.46)	(2.04)	(1.45)	(2.03)	(-2.21)	(-4.99)
(3) Add-on	-0.135***	-0.123**	-0.135***	-0.124**	-0.008	-0.016
	(-3.32)	(-2.07)	(-3.32)	(-2.08)	(-0.21)	(-0.27)
H_0^A: (1) = (2)	0.296	0.911	0.292	0.895	0.681	0.000
H_0^B: (2) = (3)	0.000	0.001	0.000	0.001	0.166	0.005
H_0^C: (1) = (3)	0.624	0.779	0.619	0.799	0.850	0.000
Adj. R^2	0.931	0.933	0.931	0.933	0.827	0.827
Observations	6,246	6,768	6,246	6,768	6,246	6,768
Hospital Controls	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y

Table A6: Laboratory Outcomes After PE Acquisition

This table reports DID estimates of the effect of PE acquisition on laboratory outcomes. Panel A shows effects on laboratory billing and total costs (inpatient charges, outpatient charges, total costs), and Panel B on laboratory cost breakdown and efficiency (inpatient costs, outpatient costs, cost-to-charge ratio). Columns report effects in the short run (years 0–4) and long run (years 5–8). The rows labeled "(1) = (2)", "(2) = (3)", and "(1) = (3)" present Wald Chi-square tests comparing acquisition types. All specifications include hospital fixed effects, event-time fixed effects, and match-ID fixed effects; hospital controls (log beds, Medicare share, Medicaid share, outpatient share, profitability, case mix index); and county controls (log population, log fair-market rent, Black share, Asian share). T-statistics (in parentheses) are based on two-way clustered standard errors (hospital and match-ID). Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Panel A: Laboratory Billing & Total Costs						
	Log(Lab Inpatient Charges)		Log(Lab Outpatient Charges)		Log(Lab Total Costs)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.375	0.053	-0.557	-0.153	-0.283	0.004
	(-1.41)	(0.32)	(-1.47)	(-0.71)	(-1.12)	(0.03)
(2) Platform	0.118**	0.341***	0.130***	0.289***	-0.005	0.032
	(2.61)	(4.95)	(3.23)	(3.93)	(-0.19)	(0.83)
(3) Add-on	-0.059	0.040	-0.151***	-0.162	-0.145***	-0.160**
	(-1.27)	(0.45)	(-2.74)	(-1.57)	(-3.95)	(-2.61)
H_0^A: (1) = (2)	0.058	0.103	0.064	0.047	0.267	0.861
H_0^B: (2) = (3)	0.003	0.004	0.000	0.000	0.000	0.003
H_0^C: (1) = (3)	0.244	0.944	0.294	0.968	0.604	0.321
Adj. R^2	0.943	0.946	0.915	0.919	0.940	0.935
Observations	6,246	6,768	6,246	6,768	6,246	6,768
Panel B: Laboratory Costs & Efficiency						
	Log(Lab Inpatient Costs)		Log(Lab Outpatient Costs)		Log(Lab CCR)	
Post-Deal Window	[0–4]	[5–8]	[0–4]	[5–8]	[0–4]	[5–8]
(1) Stand-alone	-0.197	0.091	-0.378	-0.115	0.181**	0.052
	(-1.00)	(0.66)	(-1.17)	(-0.62)	(2.22)	(1.07)
(2) Platform	0.002	0.084**	0.014	0.032	-0.116***	-0.165***
	(0.06)	(2.03)	(0.46)	(0.66)	(-3.14)	(-3.01)
(3) Add-on	-0.077**	-0.030	-0.169***	-0.232***	-0.022	-0.055
	(-1.99)	(-0.46)	(-3.36)	(-2.78)	(-0.67)	(-0.97)
H_0^A: (1) = (2)	0.310	0.960	0.221	0.430	0.000	0.001
H_0^B: (2) = (3)	0.074	0.098	0.001	0.003	0.030	0.109
H_0^C: (1) = (3)	0.567	0.412	0.534	0.555	0.010	0.079
Adj. R^2	0.940	0.936	0.916	0.908	0.890	0.896
Observations	6,246	6,768	6,246	6,768	6,246	6,768
Hospital Controls	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y
Hospital FE	Y	Y	Y	Y	Y	Y
Event-time FE	Y	Y	Y	Y	Y	Y
Match-ID FE	Y	Y	Y	Y	Y	Y

Table A7: Post-Acquisition Operating Performance: Platform Hospitals by Add-on Scale

This table reports difference-in-differences estimates of post-acquisition changes in hospital Operating Margin, estimated across add-on intensity buckets among platform hospitals. The estimation sample includes only platform and standalone hospitals (and their matched control hospitals). "None (0)" corresponds to stand-alone hospitals that were acquired as single-entity (non-roll-up) targets. Columns (1)–(4) progressively add fixed effects and controls: Column (1) includes hospital and match fixed effects only; Column (2) adds event-time fixed effects; Column (3) further adds hospital-level controls; and Column (4) adds county-level controls. T-statistics (in parentheses) are two-way clustered by hospital and match-ID. Rows labeled H_0^A–H_0^C report Wald tests comparing the "None (0)" bucket with higher add-on intensity categories. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Dependent variable: Operating Margin			
	(1)	(2)	(3)	(4)
None (0)	−0.003	0.004	−0.030	−0.033
	(−0.07)	(0.09)	(−0.68)	(−0.77)
Single (1)	0.032**	0.038**	0.034**	0.037***
	(2.41)	(2.60)	(2.43)	(2.68)
Moderate (2–9)	0.052*	0.060**	0.053**	0.053**
	(1.96)	(2.20)	(2.09)	(2.05)
Heavy (10+)	0.109*	0.119**	0.116**	0.113*
	(1.95)	(2.16)	(2.02)	(1.92)
H_0^A: None = Single	0.478	0.508	0.154	0.114
H_0^B: None = Moderate	0.315	0.317	0.096	0.082
H_0^C: None = Heavy	0.129	0.119	0.046	0.048
Adj. R^2	0.398	0.399	0.407	0.408
Observations	11,791	11,791	11,791	11,791
Hospital Controls	N	N	Y	Y
County Controls	N	N	N	Y
Hospital FE	Y	Y	Y	Y
Event-time FE	N	Y	Y	Y
Match-ID FE	Y	Y	Y	Y

Table A8: Fund Returns by Add-on Strategy Bucket: Descriptive Averages

This appendix table reports average performance and fund characteristics across groups of buyout funds defined by their reliance on add-on acquisitions. Funds are sorted into mutually exclusive "add-on buckets" based on the total number of add-on deals they complete over the fund's life. *None (0)* corresponds to funds with no add-ons, *Single (1)* includes funds with exactly one add-on, *Moderate (2–9)* includes funds with between two and nine add-ons, and *Heavy (10+)* includes funds with ten or more add-ons. For each bucket, the table reports the average internal rate of return (IRR), total value to paid-in capital (TVPI), number of add-ons, average fund size (in millions of USD), and the number of funds falling into that category. These descriptive statistics highlight how fund outcomes vary systematically with the intensity of add-on activity.

Add-on Bucket	IRR	TVPI	Avg. Add-ons	Avg. Fund Size ($M)	Fund Count
None (0)	0.1353	1.6689	0.00	1,030.94	717
Single (1)	0.1321	1.7224	1.00	1,003.04	727
Moderate (2–9)	0.1391	1.7182	4.39	1,375.66	1,328
Heavy (10+)	0.1662	1.8639	29.86	1,861.12	885

Table A9: Fund Returns and Add-on Strategy Buckets in Buyout Deals

This appendix table reports OLS regressions of fund IRR on add-on bucket indicators defined as in Table A8. Column (1) includes no controls; Column (2) adds log fund size; Column (3) adds both log fund size and vintage fixed effects. Coefficients for bucket dummies are relative to *None (0)*. Parentheses show t-statistics based on robust (HC3) standard errors clustered at the fund level. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Dependent variable: Fund IRR		
	(1)	(2)	(3)
Single (1)	-0.0032	-0.0002	0.0028
	(-0.31)	(-0.02)	(0.28)
Moderate (2–9)	0.0038	0.0101	0.0149*
	(0.45)	(1.23)	(1.81)
Heavy (10+)	0.0309***	0.0438***	0.0434***
	(3.64)	(5.33)	(5.35)
ln(Fund size)		-0.0145***	-0.0156***
		(-7.08)	(-7.28)
Vintage FE	No	No	Yes
Observations	3,657	3,625	3,625
Adj. R^2	0.005	0.021	0.067

Table A10: Fund Returns and Add-on Activity in Buyout Deals

This table reports regression estimates of fund-level internal rate of return (IRR) on logged measures of add-on activity across the full buyout universe. Panel A uses the log of one plus the number of add-on deals completed by the fund. Panel B uses the log of one plus the average number of add-on acquisitions per year (add-on velocity). Specifications (1)–(3) are: (1) no controls, (2) + log fund size, (3) + log fund size and vintage year fixed effects. Reported in parentheses are t-statistics based on robust standard errors clustered at the fund level. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Panel A: Add-on Count

	Dependent variable: Fund IRR		
	(1)	(2)	(3)
ln(1 + Add-on Count)	0.0107***	0.0149***	0.0142***
	(4.94)	(7.06)	(6.87)
ln(Fund Size)		−0.0150***	−0.0160***
		(-7.28)	(-7.51)
Vintage FE	No	No	Yes
Observations	3,625	3,625	3,625
R^2	0.006	0.022	0.068

Panel B: Add-on Velocity

	Dependent variable: Fund IRR		
	(1)	(2)	(3)
ln(1 + Add-on Velocity)	0.0125**	0.0132**	0.0089*
	(2.30)	(2.46)	(1.69)
ln(Fund Size)		−0.0091***	−0.0113***
		(-4.38)	(-5.39)
Vintage FE	No	No	Yes
Observations	2,870	2,870	2,870
R^2	0.001	0.008	0.068

Table A11: Fund Returns and GP Concurrency in Buyout Deals

This table reports regression estimates of fund-level internal rate of return (IRR) on logged measures of GP concurrency across the full buyout universe. Panel A uses the log of one plus the maximum number of acquisitions a GP closes in any calendar quarter (*Max Count*). Panel B uses the log of one plus the maximum dollar value of acquisitions a GP closes in any quarter (*Peak Value*). Panel C uses the log of one plus the maximum four-quarter rolling average of deal counts (*Peak Rolling Pace*), which captures a GP's ability to sustain a high acquisition tempo over time. Specifications with controls include log fund size and vintage year fixed effects. Reported in parentheses are t-statistics based on robust standard errors clustered at the fund level. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Panel A: Max Count

	Dependent variable: Fund IRR		
	(1)	(2)	(3)
ln(1 + Max Count)	0.0297***	0.0478***	0.0460***
	(5.50)	(8.17)	(8.07)
ln(Fund size)		−0.0187***	−0.0203***
		(-8.30)	(-8.73)
Vintage FE	No	No	Yes
Observations	3,621	3,621	3,621
R^2	0.009	0.032	0.078

Panel B: Peak Rolling Pace

	Dependent variable: Fund IRR		
	(1)	(2)	(3)
ln(1 + Peak Rolling Pace)	0.0391***	0.0615***	0.0596***
	(5.70)	(8.23)	(8.15)
ln(Fund size)		−0.0186***	−0.0202***
		(-8.23)	(-8.67)
Vintage FE	No	No	Yes
Observations	3,621	3,621	3,621
R^2	0.010	0.033	0.079

Table A9: Fund Returns and GP Concurrency in Buyout Deals (continued)

Panel C: Peak $ Value			
	Dependent variable: Fund IRR		
	(1)	(2)	(3)
ln(1 + Peak $ Value)	0.0009	0.0073***	0.0069***
	(0.66)	(4.43)	(4.24)
ln(Fund size)		−0.0178***	−0.0194***
		(-6.76)	(-6.97)
Vintage FE	No	No	Yes
Observations	3,373	3,373	3,373
R^2	0.000	0.017	0.063

Figure A1. Geographic Distribution of Hospitals by Acquisition Role

This map shows the locations of hospitals in the private equity acquisition sample. Hospitals are classified as stand-alone acquisitions, initial platform acquisitions, or subsequent add-on acquisitions within multi-hospital roll-up strategies. Stand-alone hospitals (green triangles) represent one-off transactions not linked to a larger system. Platform hospitals (red stars) mark the initial entry point of a private equity firm into a market, and add-on hospitals (blue circles) are subsequent acquisitions consolidated under the same platform.

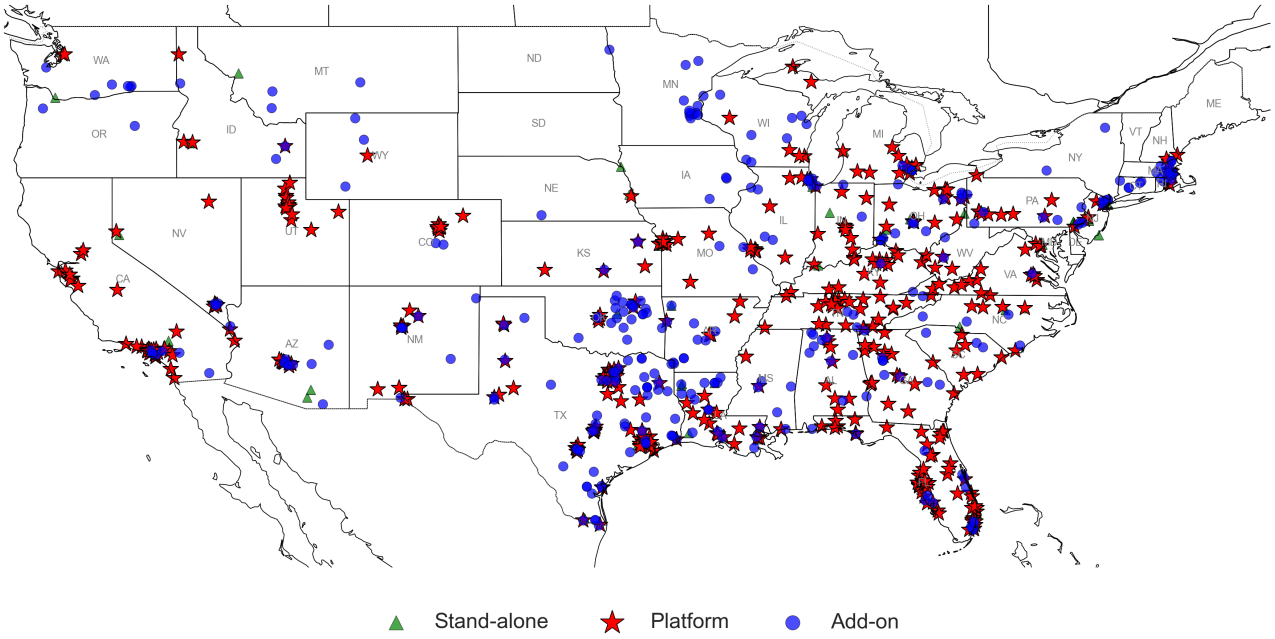
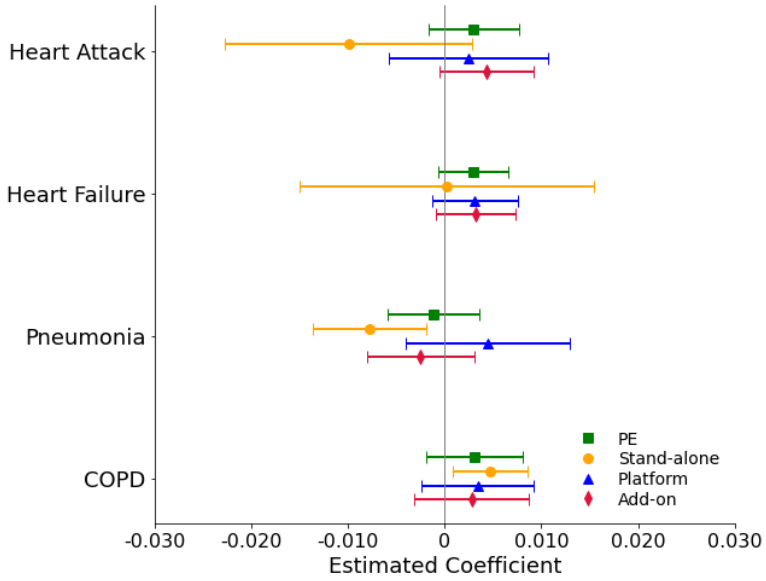
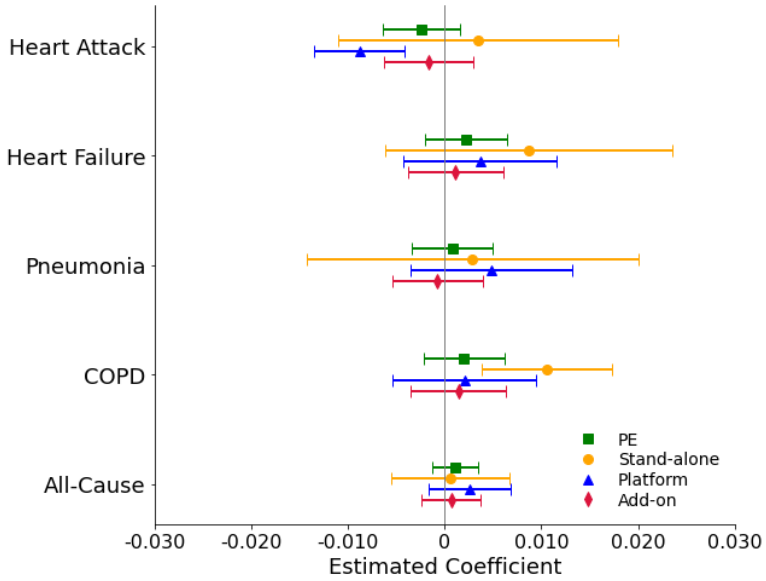


Figure A2. Patient Outcomes After Private Equity Acquisition: Mortality and Readmission

This figure plots the estimated effects of private equity acquisitions on 30-day patient outcomes. Panel A shows mortality rates for heart attack (AMI), heart failure (HF), pneumonia (PN), and chronic obstructive pulmonary disease (COPD). Panel B shows readmission rates for the same conditions as well as all-cause readmissions. All regressions include hospital and county controls, hospital fixed effects, match group fixed effects, and event-time fixed effects. Horizontal bars denote 95% confidence intervals, with standard errors clustered at the hospital level.



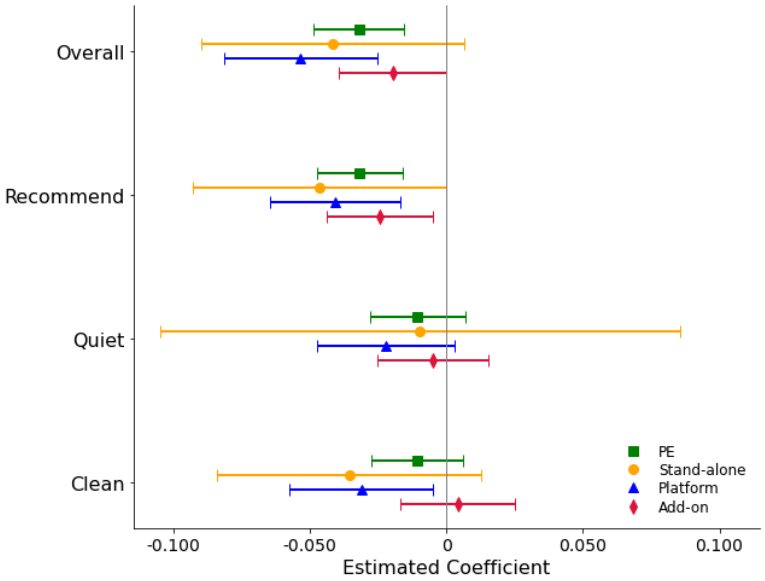
(a) Mortality rates



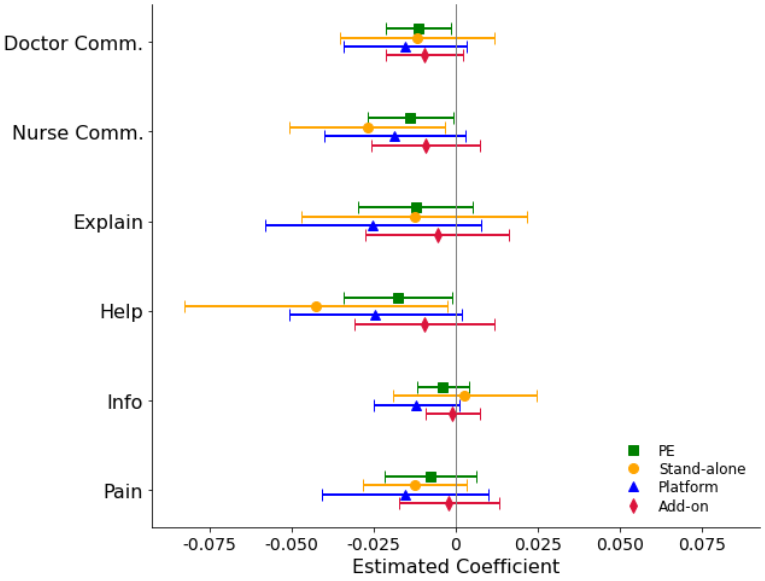
(b) Readmission rates

Figure A3. Patient Experience After Private Equity Acquisition: Satisfaction Survey Measures

This figure plots the estimated effects of private equity acquisitions on patient satisfaction outcomes. Panel A reports overall satisfaction and environment-related measures (overall hospital rating, recommendation, cleanliness, and quietness). Panel B reports care and interaction measures (communication with doctors, communication with nurses, explanation of care, help, information, and pain management). All regressions include hospital and county controls, hospital fixed effects, match group fixed effects, and event-time fixed effects. Horizontal bars denote 95% confidence intervals, with standard errors clustered at the hospital level.



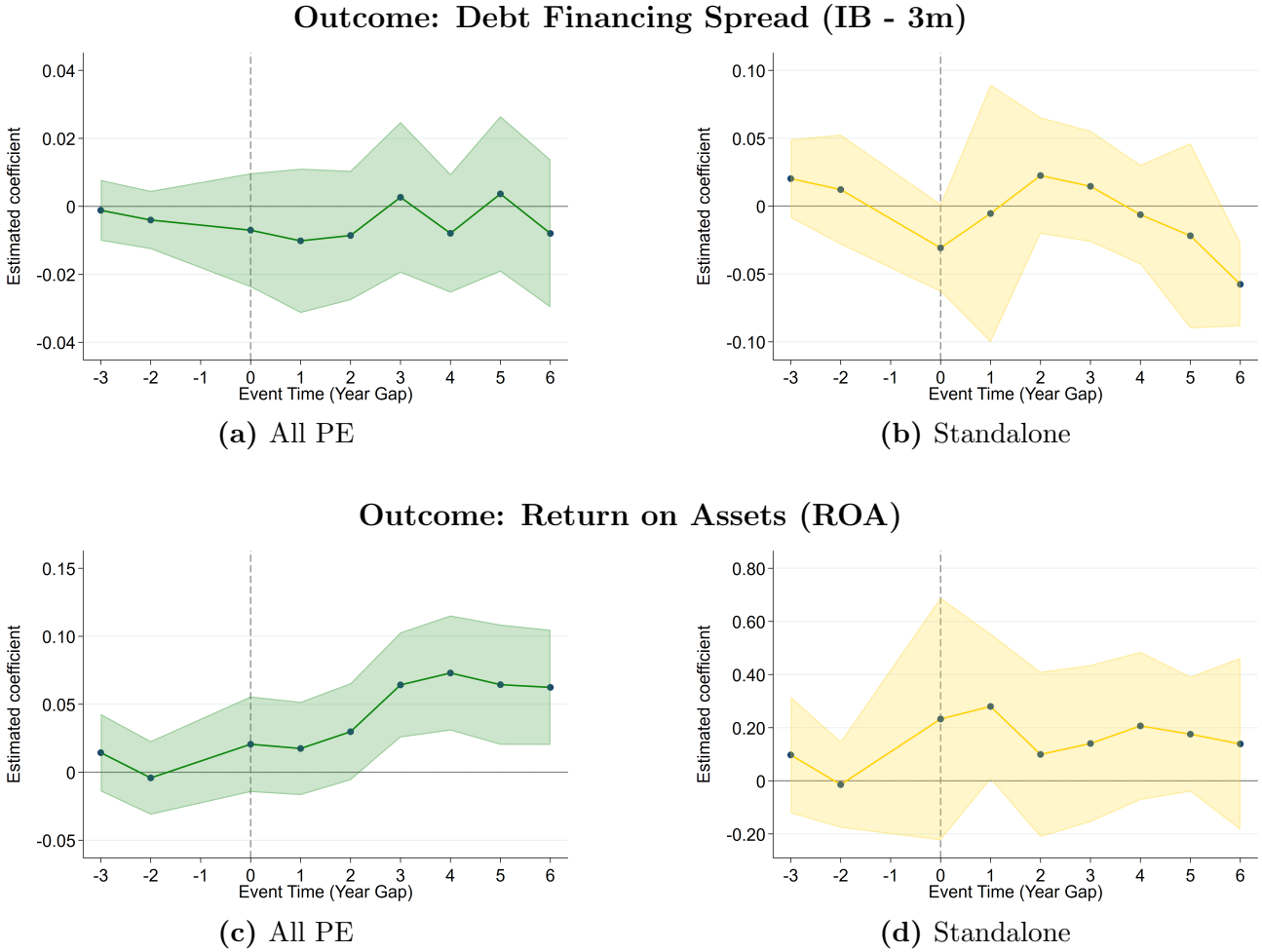
(a) Overall and environment-related satisfaction



(b) Care and interaction-related satisfaction

Figure A4. Event-Study Estimates: PE and Standalone Hospitals

This appendix figure plots event-study coefficients with two-way clustered standard errors (provider and match group) for five outcomes: return on assets (ROA), debt financing spread (IB - 3m), Medicare case-mix index (CMI), core employment, and administrative employment. All specifications include hospital controls (log beds, Medicare share, Medicaid share, outpatient share), county controls (log population, log FMR, Black share, Asian share), and fixed effects for provider, year-gap, and match group. The omitted event time is $F1$ (one year before). Results for Platform and Add-on hospitals are reported in Figure 2; this appendix figure shows the complementary All PE and Standalone specifications.

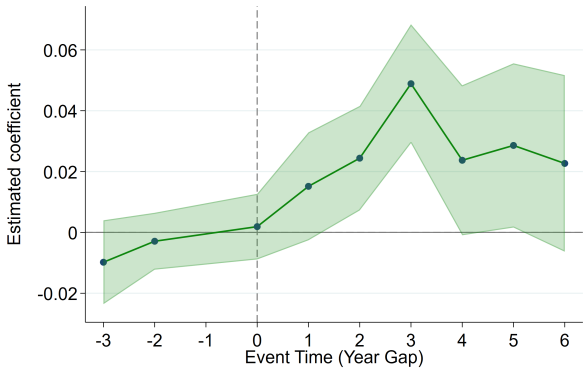


(a) All PE **(b)** Standalone

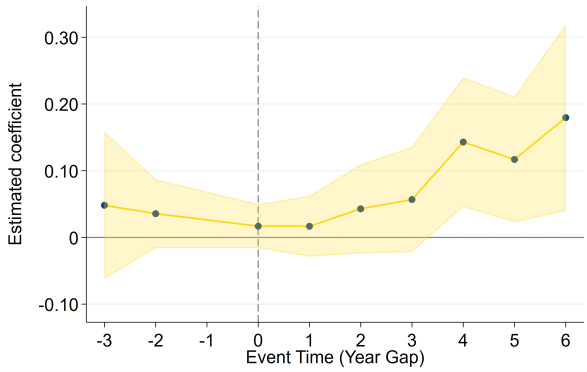
(c) All PE **(d)** Standalone

Figure A4. Event-Study Estimates: PE and Standalone (continued)

Outcome: Case-Mix Index (CMI)

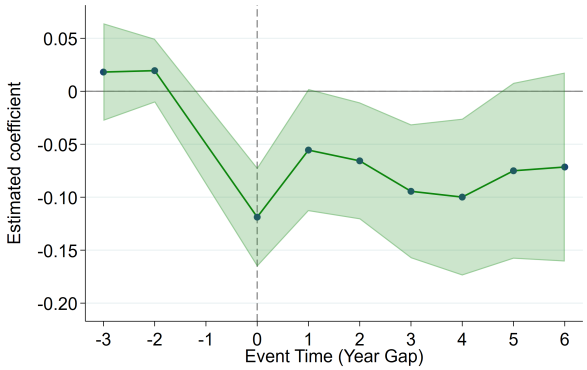


(e) All PE

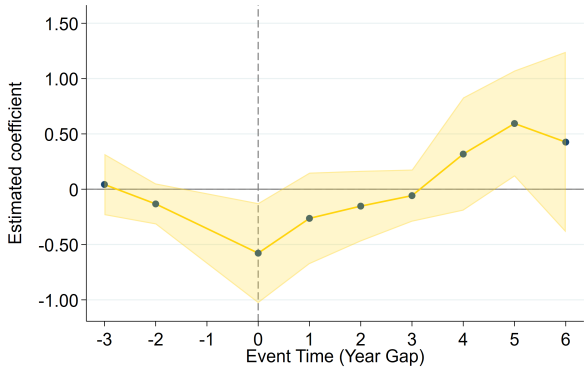


(f) Standalone

Outcome: Core Clinical Employment

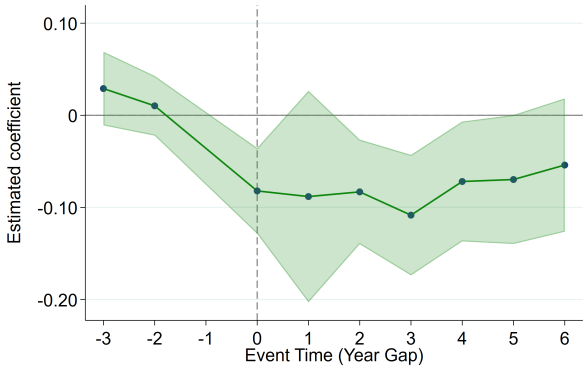


(g) All PE

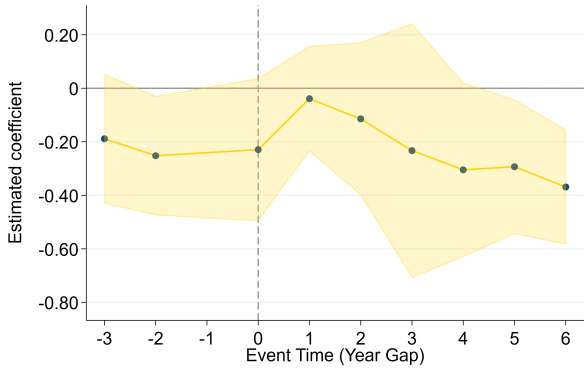


(h) Standalone

Outcome: Administrative Employment



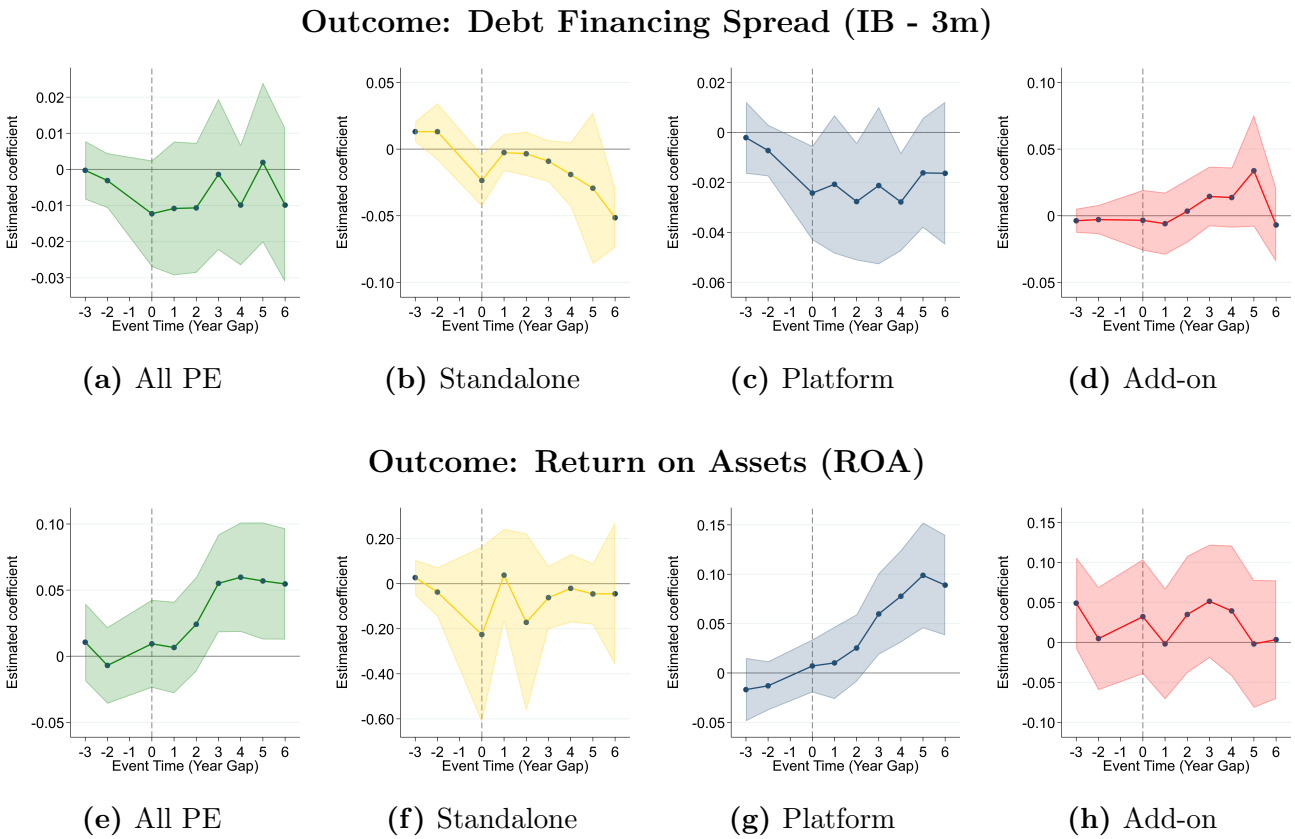
(i) All PE



(j) Standalone

Figure A5. Balanced-Panel Event-Study Estimates

This appendix figure plots balanced-panel event-study coefficients with two-way clustered standard errors (provider and match group). All specifications include hospital controls (log beds, Medicare share, Medicaid share, outpatient share), county controls (log population, log FMR, Black share, Asian share), and fixed effects for provider, year-gap, and match group. The omitted event time is $F1$ (one year before). The balanced panel requires that treated hospitals have complete observations for all years in the window $[-3, +6]$.

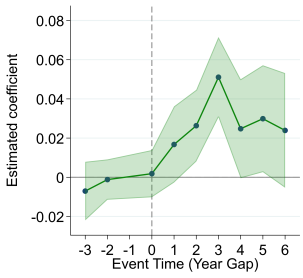


(a) All PE **(b)** Standalone **(c)** Platform **(d)** Add-on

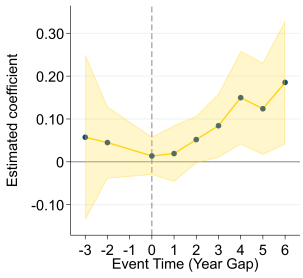
(e) All PE **(f)** Standalone **(g)** Platform **(h)** Add-on

Figure A5. Balanced-Panel Event-Study Estimates (continued)

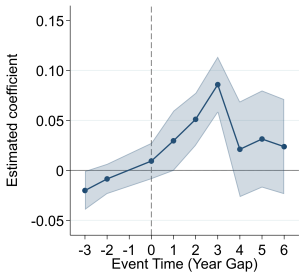
Outcome: Case-Mix Index (CMI)



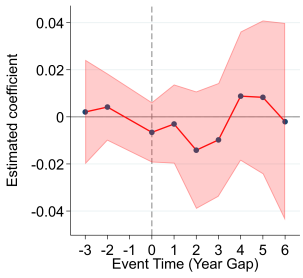
(i) All PE



(j) Standalone

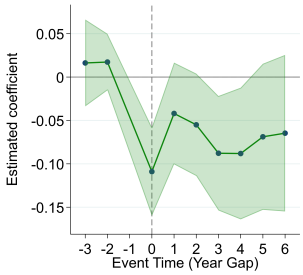


(k) Platform

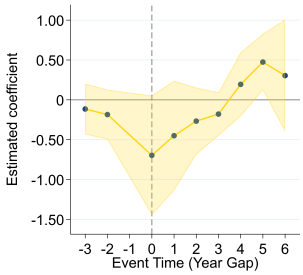


(l) Add-on

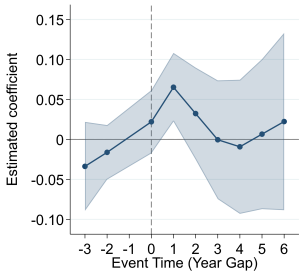
Outcome: Core Clinical Employment



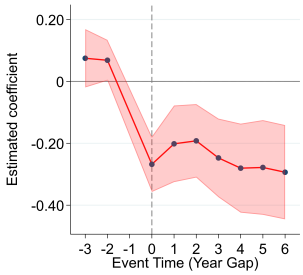
(m) All PE



(n) Standalone

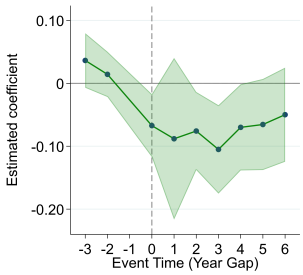


(o) Platform

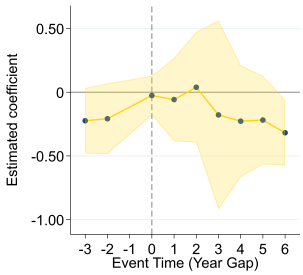


(p) Add-on

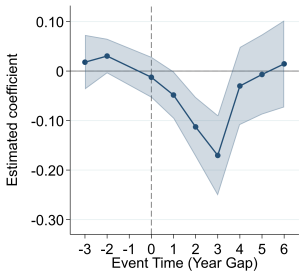
Outcome: Administrative Employment



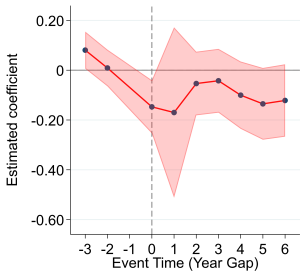
(q) All PE



(r) Standalone



(s) Platform

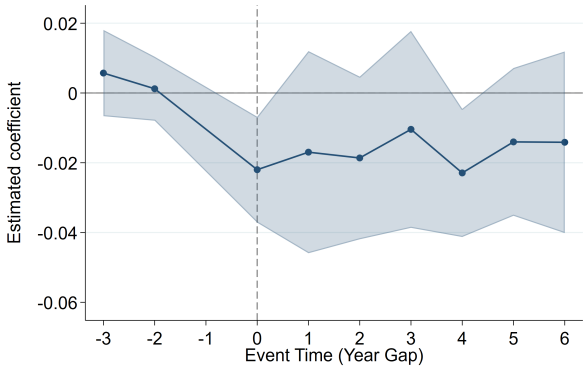


(t) Add-on

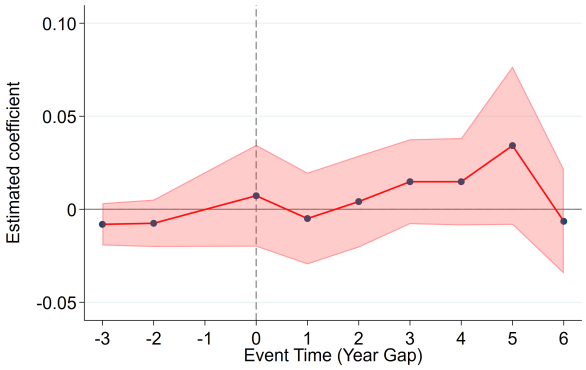
Figure A6. Event-Study Estimates: No Standalone Sample

This appendix figure reports event-study coefficients after reclassifying all stand-alone acquisitions as platforms and restricting the sample to platform and add-on hospitals. Two-way clustered standard errors (provider and match group) are used. All specifications include hospital controls (log beds, Medicare share, Medicaid share, outpatient share), county controls (log population, log FMR, Black share, Asian share), and fixed effects for provider, year-gap, and match group. The omitted event time is $F1$ (one year before).

Outcome: Debt Financing Spread (IB - 3m)

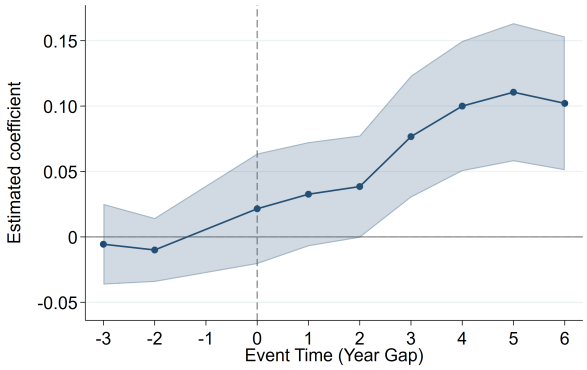


(a) Platform

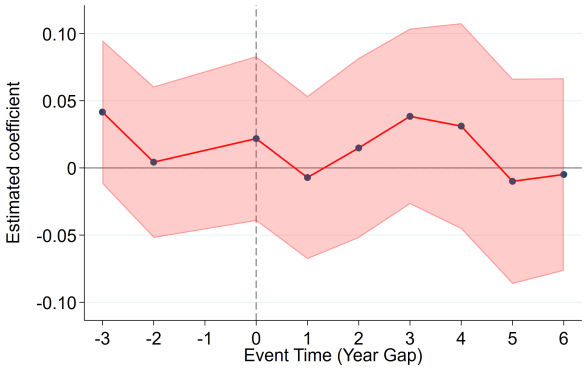


(b) Add-on

Outcome: Return on Assets (ROA)



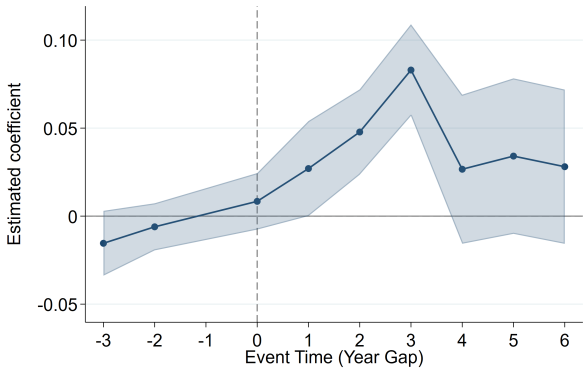
(c) Platform



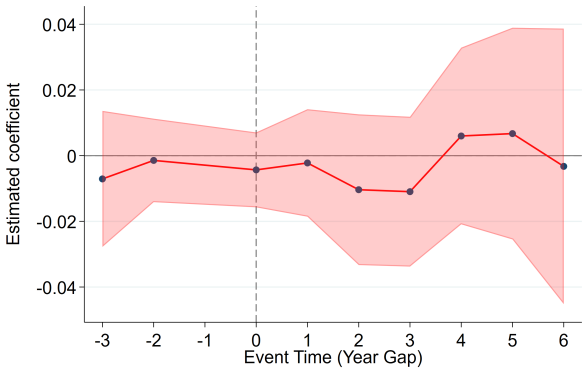
(d) Add-on

Figure A6. Event-Study Estimates: No Standalone Sample (continued)

Outcome: Case-Mix Index (CMI)

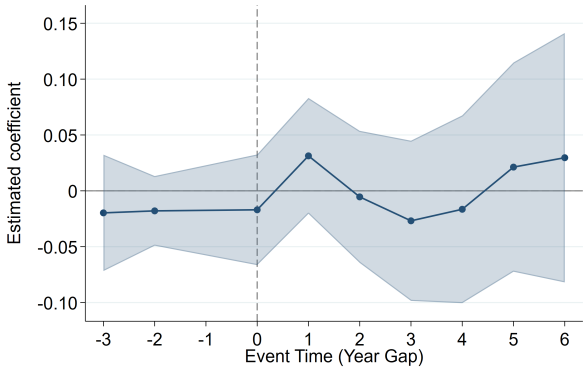


(e) Platform

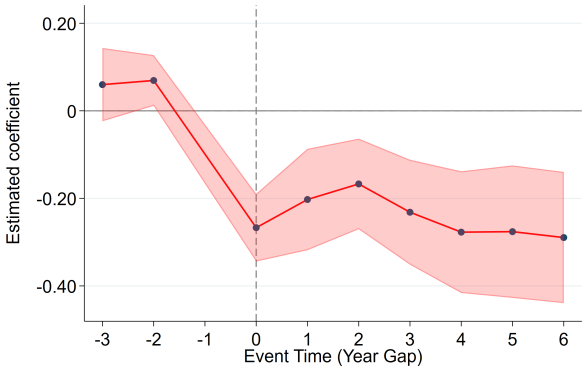


(f) Add-on

Outcome: Core Clinical Employment

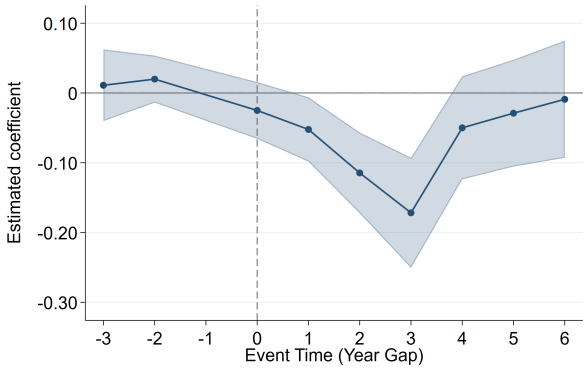


(g) Platform

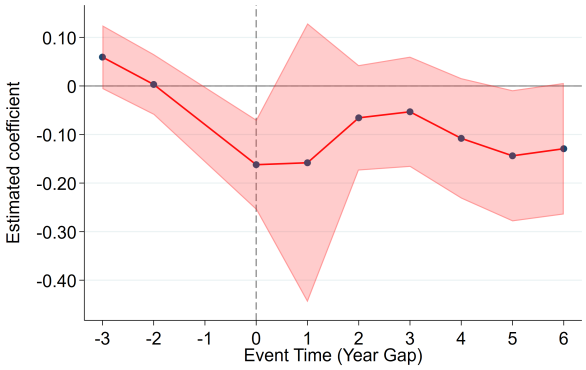


(h) Add-on

Outcome: Administrative Employment



(i) Platform



(j) Add-on

Appendix B: Legal and Accounting Background

This appendix provides detailed background on the legal, accounting, and regulatory frameworks that shape private equity roll-ups in the hospital industry. It sets out the institutional rules that determine how acquisition debt is recorded and whether it appears in hospital-level liabilities, and it explains how reimbursement formulas define the scope for margin improvement. Together, these frameworks clarify why PE buyouts generate financing relief at the platform stage and profitability gains through within-rule adjustments, while remaining subject to federal cost-reporting standards and state oversight.

B.1 Pushdown Accounting and Hospital-Level Liabilities

Under U.S. Generally Accepted Accounting Principles (GAAP), the treatment of acquisition debt depends on whether the acquired entity elects pushdown accounting. Accounting Standards Codification (ASC) 805-50 (formerly SFAS 141R) specifies that pushdown accounting is optional. When a new owner obtains control of a subsidiary, it may, but is not required to, restate the subsidiary's separate financial statements to reflect the parent's purchase-price basis and related acquisition debt.

The Securities and Exchange Commission reaffirmed this discretion in Staff Accounting Bulletin Topic 5.J, which states that a subsidiary "should apply pushdown accounting only when the new parent elects to do so and the resulting financial statements are useful to the subsidiary's users."

Most hospital systems elect not to apply pushdown accounting because doing so would insert system-level buyout debt into the books of each licensed hospital, disrupting continuity in Medicare cost-report comparability and potentially violating state solvency requirements.

Hospitals are required under 42 CFR § 413 to file annual Medicare cost reports that measure reimbursable costs on a consistent historical basis. Electing pushdown accounting would reset asset values and liabilities to the acquisition price, undermining year-to-year comparability that the Centers for Medicare & Medicaid Services (CMS) uses to determine allowable costs.

State licensing laws reinforce this separation. For example:

- **California Health & Safety Code § 1272.3** requires hospitals to maintain positive net-asset balances for license renewal.
- **Texas Administrative Code § 133.41** mandates minimum liquidity ratios for acute-care facilities.

Pushing acquisition debt down to individual hospitals could render many facilities technically insolvent under these statutes. As a result, system-level holding companies retain the

leveraged debt, while the operating hospitals record only intercompany equity injections from the parent. This structure explains why hospital-level liabilities in CMS cost reports often decline after acquisition even though consolidated system-level leverage rises.

B.2 Medicare and Medicaid Reimbursement Rules

The term "within-rule" in this paper refers to the concrete reimbursement mechanisms defined by CMS and parallel state programs. These rules determine how hospitals are paid for inpatient and outpatient services, how overhead and capital costs are reimbursed, and how cost reports must be filed. PE-owned hospitals can raise revenue or margins by working within these formulas without violating them.

Diagnosis-Related Groups (DRGs) for inpatient care. CMS pays most inpatient claims under the Inpatient Prospective Payment System (IPPS), which classifies each discharge into a DRG with an associated weight reflecting average resource use. Payment equals the base rate multiplied by the DRG weight and adjusted for area and case factors. Hospitals can lawfully increase revenue by documenting additional comorbidities, shifting service mix toward surgical or intensive-care lines, or emphasizing specialties with favorable DRG margins. Such adjustments raise the Case-Mix Index (CMI) and average reimbursement per discharge, which is consistent with the patterns in Table 10.

Ambulatory Payment Classifications (APCs) for outpatient services. Outpatient procedures are reimbursed under the Outpatient Prospective Payment System (OPPS), which groups services into APCs with fixed national payment rates. By reallocating visits from inpatient to outpatient settings or reclassifying procedures into higher-paying APC codes, hospitals can increase revenue per encounter while remaining within CMS rules. PE-backed systems often emphasize outpatient service expansion because it generates faster turnover and higher margins under OPPS.

Medicare and Medicaid cost-reporting standards (42 CFR § 413). These regulations define which expenses are allowable for reimbursement and require uniform reporting of costs, depreciation, and capital structure. Hospitals that change accounting bases must obtain CMS approval. The rigidity of these standards gives PE owners an incentive to optimize revenue through coding and service-mix adjustments rather than altering official cost structures, reinforcing the within-rule nature of their strategies.

B.3 State-Level Corporate Practice of Medicine Doctrines

State corporate practice of medicine (CPOM) laws determine whether non-physician entities may own, employ, or share in the profits of medical practices. These statutes vary across states and shape hospitals' ability to internalize physician revenue streams.

Concept and legal variation. Strict CPOM states, including California, New York, and Colorado, prohibit corporations or investment funds from directly employing physicians. Hospitals in these states must rely on friendly professional corporations, where a nominally independent professional entity bills payers and contracts its management to a non-physician company. In lenient states, including Florida, Texas, and Arizona, non-physician ownership is permitted or loosely enforced, which allows hospitals and PE firms to consolidate billing operations and capture outpatient revenue streams more fully.

Measurement: the CPOM Regulation Index. Following Liu (2022), this study employs the CPOM Regulation Index, which quantifies cross-state variation in the enforcement of CPOM restrictions. Higher index values indicate more lenient enforcement and greater flexibility for non-physician ownership and management, while lower values indicate stricter enforcement. In the present study, this index proxies for the ease of implementing within-rule revenue strategies, such as expanding physician employment, facility-fee billing, and outpatient reclassification, under otherwise identical Medicare and Medicaid reimbursement rules.

B.4 Integrating Financing and Regulatory Mechanisms

These legal and accounting features clarify why PE buyouts of hospitals produce the empirical patterns observed in the main text. System-level leverage arises from the optional nature of pushdown accounting and state solvency constraints. Profitability improvements arise from exploiting CMS reimbursement rules and CPOM heterogeneity. Both mechanisms operate within the existing legal framework and illustrate how PE owners create value by navigating, rather than violating, the regulatory architecture of the U.S. healthcare system.

Appendix C: Data Construction

This section details the construction of the dataset used in this paper. The raw data was compiled from multiple sources, cleaned, and merged to form a longitudinal panel dataset.

1. Data Sources

The following data sources were used to construct the final dataset:

1. **CMS Cost Reports:** These reports, obtained from the Centers for Medicare and Medicaid Services (CMS), provide detailed financial information on U.S. hospitals. The dataset includes variables on total patient revenue, operating expenses, adjusted costs, and patient volume. Data were extracted for the years 1996 to 2019. Both the 1996 and 2010 versions of the CMS cost report forms were used, which required mapping variables across forms.

2. **Quality Net Data:** This dataset contains hospital quality measures such as mortality and readmission rates, as well as patient satisfaction metrics. The data was sourced from CMS's QualityNet system, covering years from 2005 to 2024. For earlier years, archived data was retrieved using the Wayback Machine to ensure continuity.

3. **Preqin and PitchBook:** These databases were used to gather private equity (PE) acquisition information. Preqin provided details on PE fund activity, while PitchBook supplied comprehensive transaction-level data, including hospital acquisition details, investor information, and deal values.

4. **AHA Data:** The American Hospital Association (AHA) data was utilized to track hospital ownership and system affiliations from 1994 to 2019. This dataset was particularly useful in identifying hospitals that transitioned from one owner to another, providing key information for linking hospitals to their parent systems and ownership transitions.

5. **SDC-Platinum, FactSet, and Capital IQ:** Both public and private acquisition data were extracted from SDC-Platinum, FactSet, and Capital IQ. These sources were used to capture acquisition details for hospitals that were acquired by both private equity firms and other types of investors.

2. Data Cleaning and Transformation

To ensure that the data was suitable for panel analysis, extensive cleaning and transformation steps were applied:

1. **CMS Cost Report Data:** The CMS Cost Report data required significant restructuring. The raw data is organized into various worksheets, each containing a specific set of variables. The worksheets were manually mapped to the relevant variables such as revenue, expenses, and operational metrics using CMS documentation. A mapping crosswalk was developed to link the variables from the 1996 and 2010 versions of the cost report forms.

2. **AHA Data Integration:** AHA data was merged with the CMS Cost Report data by hospital identifiers. Because some hospitals changed systems or ownership structures over time, additional steps were taken to ensure that hospital system transitions were properly captured. This involved tracking hospitals that were acquired by private equity firms as part of broader system transactions.

3. **Preqin and PitchBook Data Cleaning:** The PE acquisition data from Preqin and PitchBook required normalization and deduplication. For example, multiple entries for the same hospital deal were often present in different formats across the datasets. Fuzzy matching techniques were applied to identify duplicate deals and consolidate them under a single identifier. This process was particularly important for identifying whether a hospital was acquired as part of a PE firm's first deal or a subsequent acquisition.

4. **FactSet, Capital IQ, and SDC-Platinum Data Integration:** Public and private market acquisition data from FactSet, Capital IQ and SDC-Platinum were matched with Preqin and PitchBook data using identifiers such as hospital names and deal dates. Fuzzy matching was used to link records across databases, and any discrepancies were manually verified against original acquisition reports.

3. Data Integration and Linking

A key aspect of constructing the dataset involved linking hospitals across different datasets and sources:

1. **Hospital-Level Matching:** Hospitals were matched across the CMS Cost Reports, QualityNet, and AHA datasets using unique hospital identifiers (e.g., Medicare Provider Number). In cases where hospitals changed ownership or systems, the dataset was adjusted to reflect ownership changes over time.

2. **Fuzzy Matching:** Fuzzy matching algorithms (token set ratio) were applied to link hospitals and investors across the Preqin, PitchBook, FactSet, and SDC-Platinum datasets.

Matching thresholds were carefully calibrated to minimize false positives and negatives. Any ambiguous matches were manually reviewed to ensure data integrity.

3. **Investor Matching:** Private equity firms and other investors were matched to hospitals using deal-level data from PitchBook and Preqin. The dataset includes information on the date of acquisition, deal value, and whether the acquisition was part of a first or subsequent deal for the PE firm.

4. Data Validation and Final Dataset Construction

The final dataset underwent several rounds of validation and testing to ensure reliability:

1. **Cross-Validation of Acquisition Dates:** Acquisition dates from Preqin, PitchBook, SDC-Platinum, and FactSet were cross-validated with publicly available sources, including news articles and reports. Any discrepancies were manually resolved.

2. **LLM-Verified Matches:** Matches between hospitals and investors were validated using LLM models. The use of LLM models, including GPT-4o, ensured high accuracy in the matching process. Manual checks were performed on cases where the LLM models did not agree.

3. **Final Dataset Structure:** The dataset is structured as a balanced panel dataset, with hospital-level observations spanning from 1996 to 2019. Each hospital is identified by its Medicare Provider Number, and variables track financial performance, ownership changes, and operational efficiency before and after PE acquisition.

This comprehensive dataset enables a detailed analysis of how private equity ownership affects hospital performance, including changes in operational efficiency, profitability, and patient outcomes.